PAPER TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 114, No. 3 Thursday, January 15, 1942 Price Ten Cents

U. S. Announces Pulp Allocation Program

Director of Priorities Issues Order Under Which Sulphite Pulp Will Be Made Available To Regular Customers of Brown Co., Eastern Corp., and Rayonier, Inc.—Order Effective As of January 9.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 14, 1942—A program to allocate sulphite pulp among the regular customers of three producers whose plants are widely engaged in war work was announced today by Donald M. Nelson, Director of Priorities.

During January, 4,200 tons of sulphite pulp will be set aside under the program. This amount may change from month to month.

General Preference Order M-52 was issued by Mr. Nelson to carry out the program, under which sulphite pulp will be made available to the regular customers of Rayonier, Inc., Brown and Company and Eastern Corporation. These three firms, which together have an annual pulp producing capacity of approximately 500,000 tons, are using part of their facilities to produce nitration pulp for explosives.

Order Affects All Sulphite Pulp Producers

The order, effective January 9, requires all sulphite pulp producers in the country, some of whom are not immediately able to produce nitration pulp of the required quantities, to contribute proportionately part of their production each month to make up the tonnage to be allocated. Customers of these contributing producers will have their supplies cut correspondingly.

Approximately 120 customers of the three war-producing concerns, engaged in manufacturing all types of sulphite paper products, such as writing paper, tissue paper, book stocks, typewriter and mimeograph paper, etc., are expected to be relieved under the program.

Allocation Adopted to Avoid Shutdowns

The Pulp and Paper Branch of the Office of Production Management, after long study and several industry conferences, found that an allocation program offered the best method of avoiding shutdowns of mills usually served by Rayonier, Brown and Eastern. The mills could not purchase pulp directly from other producers, because market supplies were completely covered by existing contracts. No immediate way could be found to supply the mills by increasing domestic consumption or imports.

Price to Government Set by OPA

The amount of pulp to be set aside each month by any producer can be purchased by the three government producers at prices no higher than those established by the Office of Price Administration, and must be turned over to their regular domestic customers without profit or mark up on any account.

Rayonier, Inc., operates plants at Fernandina, Fla., Port Angeles, Wash., Hoquiam, Wash., and Shelton, Wash. Eastern Corporation's plant is at South Brewer, Me., and the Brown Company's at Berlin, N. H. Each of the three producers is required to contribute its proportional share of the monthly allocation tonnage.

Eaton-Dikeman Damaged by Fire

CARLISLE, Pa., January 12, 1942—Fire of undetermined origin swept through much of the Eaton-Dikeman Company paper mill in Upper Holly on the morning of January 7, disrupting operation and leaving heavy damage.

The plant which makes a variety of filter paper, much of it for industries engaged directly in defense work, has been operating at capacity on a 24-hour-day, six-day-a-week schedule, employing 160 persons.

Olen V. Yates, vice president and treasurer, who was at the plant when the fire started in the machine shop and watched its progress through the cutting room, paper making machine room and laboratory, estimated tentatively that operations could be resumed in "a few days" but some veteran machinists predicted it would be several weeks. Neither Mr. Yates nor his father, C. C. Yates, the president of the company, would estimate the damage.

The Eaton-Dikeman Company took over the Holly plant, then vacant, in 1933 after its mill in Lee, Mass., was destroyed by fire. In recent years the company, one of the largest making filter paper exclusively, has enlarged the mill. Its product is used throughout the country.

Progress Reported in Checking Fiber Loss

Report of Advisory Committee of Pulp and Paper Industry Indicates Fiber Loss By Pulp Mills Decreased 9 Per Cent In 1941—Forest Laboratory Wins Larger Budget—Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., January 12, 1942—Progress in the elimination of fiber loss in pulp mills, and the consequent reduction of river pollution, was made during the last year, according to a report issued by the advisory committee of the pulp and paper industry, of which R. A. Rothschild, Neenah, Wis., is chairman. The committee is a voluntary group set up in 1926 to work with state agencies.

Mr. Rothschild said the fiber loss last year amounted to 1.53% compared with 1.68% in 1940, a decrease of 9%. The goal of not less than 1% of waste is gradually being approached. Mills have accomplished the reduction by improved equipment and more efficient methods.

Control of Sulphite Waste Liquor Progresses

Control of sulphite waste liquor also has been stepped up through the efforts of a committee representing eleven of the fourteen Wisconsin sulphite mills. This group, working with the research staff of the Institute of Paper Chemistry at Appleton, Wis., spent $25,000 last year studying this major source of river pollution. The funds are raised on a self-assessment basis, and a larger fund will be available in 1942. The work is being conducted under the direction of J. M. Holderby, research engineer.

A ten-year review has been made by the state committee on water pollution, and a conference was held last week with the Wisconsin Conservation Commission to review the report. L. F. Warrick, chief state sanitary engineer, made the following comments on the report:

Engineer Comments on Report

"Certain pulp and paper wastes have been provided with treatment by discharge through municipal sewage treatment plants. This has been particularly successful in the case of treatment of rag pulp wastes, de-inked pulp wastes, and paper mill wastes high in suspended solids. But the problem of waste sulphite liquor remains.

"This waste is particularly objectionable because of its high oxygen demand and acid character, and because of the lack of any universally accepted method of treatment. One mill in the state operates a lime precipitation process for the recovery of by-products, which has been found to effect an over-all reduction of approximately 50 per cent in the strength of the waste.

"At the present time the sulphite mills in the state have organized a research group to conduct experiments on means of treatment and disposal of waste sulphite liquor. A number of processes are being investigated but no statements have been issued recommending any methods of treatment. Some improvements have been made within the mills themselves in the reduction of fiber losses. However, it is believed that many of these mills have reached what the management considers a minimum loss. In several cases this minimum loss is in excess of the standards of our committee and it appears that further reduction can only be obtained by some external means of treatment designed specifically for the removal of this suspended material and disposing of it as a waste."

Forest Laboratory Wins $1,016,260 Budget

The United States Forest Products Laboratory at Madison, Wis., has won a budget estimate of $1,016,260 for the 1943 fiscal year.

In his annual budget message to Congress, President Roosevelt recommended that amount to extend studies for which $966,313 was appropriated last year. The laboratory spent $632,500 in the 1941 fiscal year.

The largest sum is for investigations in timber mechanics and engineering so as to discover more efficient methods and bring about utilization of wood as a substitute for metals in national defense.

Paper Institute Students Present Papers

Two students of the Institute of Paper Chemistry will present papers at the monthly meeting of the Lake States section of the Technical Association of the Pulp and Paper Industry. The meeting will be held Tuesday evening, January 13, following a 6:30 dinner at the Conway hotel, Appleton, Wis. George Dewitt Knight will give a paper on "The Bleachability of Pulp," and Edwin J. Loutzenheiser on "Two-Sidedness of Dyed Papers."

To Revalue Charles A. Babcock Estate

A stipulation agreeing to an increase in the appraisal value of the estate of Charles A. Babcock, Neenah, Wis., has been filed in the Winnebago County court at Oshkosh, Wis. It provides that the decedent's capital stock of the Wisconsin River Pulp and Paper Company, of which he was president, be increased in appraised value from $2,227,200 to $2,552,000. His capital stock in the Citizens National Bank of Stevens Point, Wis., was increased in value from $2,500 to $3,125. The stipulation represents a compromise between appraisals filed by the executors and the estimates of the state department of taxation. The estate was inventoried by the executors, Frank J. Sensenbrenner, F. E. Ballister and Guy Babcock, at $3,709,647.65.

Paper Men on Bank Directorates

Among the directors reelected by the First National Bank of Menasha, Wis., at the annual stockholders' meeting last week were: Leo Croy, vice-president of the Marathon Paper Mills Company; R. M. Sensenbrenner, vice-president and general manager of the George A. Whiting Paper Company; Hugh Strange, vice-president and general manager of the John Strange Paper Company, and Frank B. Whiting, president of the George A. Whiting Paper Company and the Whiting-Plover Paper Company.

The Bank of Menasha reelected as board members R. J. Fieweger, treasurer of Wisconsin Tissue Mills,

F. E. Sensenbrenner, assistant secretary-treasurer of Kimberly-Clark Corporation, Paul Strange, D. L. Kimberly, Ben Plowright and A. F. Weber. Mr. Fieweger was reelected president by the board.

Otto E. Loehning Congratulated

Open house was held Tuesday evening last week by Gaylord C. Loehning, Neenah, Wis., for his father, Otto E. Loehning, who on January 6 completed fifty years of service with the Neenah Paper Company. He is assistant superintendent. About 150 friends, relatives, officials and co-workers called at the home to extend congratulations.

Bassett-Whiting Nuptials

Miss Frances Whiting of Neenah, Wis., will be married February 28 to Robert Bassett of Green Bay, Wis. The ceremony will take place at Whiting Memorial Baptist church at Neenah, followed by a reception at North Shore Golf Club. Miss Whiting's father is Frank B. Whiting, president of the George A. Whiting Paper Company and the Whiting-Plover Paper Co.

OPA and Publishers Discuss Newsprint

WASHINGTON, D. C., January 14, 1942—The Office of Price Administration held an "explanatory" meeting today with several representative publishers to survey the possible effects on the American newspaper industry of newsprint price increases announced by certain Canadian manufacturers.

The International Paper Company of Canada recently announced that its price on newsprint for export to the United States would be increased from $50 to $53 per ton in the second quarter of 1942. This was followed by similar announcements by other Canadian manufacturers.

Representatives of American publishers were asked to submit cost data to OPA showing how operations in this country would be affected by such an increase. The publishers were requested to determine if present operating revenues would absorb it, or whether they might consider it necessary to advance newspaper prices, reduce the size of the average paper, or take other action.

Approximately 75% of the newsprint used in this country is imported from Canada. Some publishers advised OPA that if Canadian authorities permitted the proposed increase to become effective, American publishers would be compelled to pay approximately $8 more per ton for newsprint than Canadian publishers. The increase would be the first to be put into effect since April, 1938.

Since OPA is attempting to work closely with Canadian authorities on all matters affecting price control, it was considered essential to obtain as soon as possible a complete picture of how the American publisher would be affected by the proposed increase.

The meeting was in charge of Robert M. Macy, Price Executive in charge of the Pulp and Paper Section. Among those present were: George C. Biggers, The Atlanta Journal, Atlanta, Ga.; William G. Chandler, Scripps-Howard Newspapers, New York; Howard Davis, The New York Herald-Tribune, New York; Walter M. Dear, The Jersey Journal, Jersey City, N. J.; T. J. White, Hearst Newspapers, Chicago; S. E. Thomason, The Chicago Daily Times, Chicago, and S. H. Kauffmann, The Washington Star, Washington, D. C.

James L. Coker—O.P.M. Consultant

James L. Coker, President of Sonoco Products Company, Hartsville, S. C., has accepted a position as consultant in the Pulp and Paper Branch of the Office of Production Management, Washington, D. C. Sonoco Products Company operate a number of paper mills in the production of paperboard used in

JAMES L. COKER

the manufacture of paper cones, tubes and cores for the textile industry.

Mr. Coker represents the third generation of his family in paper manufacturing, and his wide experience in the paper manufacturing industry should be invaluable to the O.P.M. at this time.

J. D. Haskell Urges Cooperation

[FROM OUR REGULAR CORRESPONDENT]

FULTON, N. Y., January 12, 1942—John D. Haskell, general manager of the Dilts Machine Works, has sent a communication to city officials urging that citizens be requested to separate various grades of waste paper as an aid in the present national emergency. In his letter he states that the company is perhaps more concerned over the paper shortage across the country than most individuals and it rankled him to see the amount of waste paper that is lost in the weekly collection from the streets. He calls attention to the three grades of waste paper that would normally be picked up which would be classified as corrugated, folded news and mixed waste. There is a difference of probably $2.50 a ton between the mixed waste and the corrugated with the folded news somewhere between the two. He believes that the Salvation Army does a reasonably good job of at least collecting the newspapers but that there is a considerable amount of usable waste papers which probably will never be reclaimed. He quotes that almost all ammunition shells, airplane parts and the like are packed in corrugated and paper containers, made almost 100 per cent of reclaimed waste papers. He concludes by hoping for co-operation of citizens as an additional bit in helping to win the war. The Dilts Machine Works is among the largest manufacturers of paper machinery in this section.

Paper Concerns Indicted for Price Fixing

Federal Grand Jury At Philadelphia On January 7 Returns Indictments Against Forty-Four Concerns, Many Individuals and A Trade Association—Group Alleged To Monopolize Waxed Paper Output.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., January 7, 1942—A Federal grand jury returned indictments today against forty-four corporations, a trade association and eighty-nine officers and directors of the concerns on a charge of engaging in a nation-wide conspiracy to control the production and prices of waxed paper products.

The group, according to the indictment, controls 90% of the production of waxed paper in the country. Their products were described as including almost every type of waxed wrapper, from those used for candies to those used for loaves of bread and larger objects.

The conspiracy was made possible, the indictment charged, by the affiliation of the various corporations with the American Waxed Paper Association, the headquarters of which is in Philadelphia. The association and its secretary, George J. Lincoln Jr., were among those indicted.

List of Concerns Indicted

The corporate and individual defendants in the Eastern States are:

American Tissue Mills of Holyoke, Mass., and Benjamin F. Perkins, president, and Stephen Floria, and Charles Ray.

Arkell & Smiths of Canajoharia, N. Y., and Bartlett Arkell, president, and Sheldon S. Yates, vice president.

Ben Mont Papers, Inc., of Bennington, Vt., and Daniel C. Hurlbut, president; D. R. Sargent, sales manager and Homer Sinclair.

Berst-Forster-Dixfield Company, of Oakland, Me., N. G. Begle, chairman of the board; R. G. Fairburn, vice president, and W. A. Fairburn Jr., vice president.

Diamond Wax Paper Company of Rochester, and Howard Van R. Palmer, former president.

Hamersley Manufacturing Company of Garfield, N. J., and Walter L. Dawson, president, and Arthur Schwab, director.

Henle Wax Paper Manufacturing Company, Inc., the Bronx, and Sidney Jacobson, president.

Nashua Gummed and Coated Paper Company of Nashua, N. H., and Winthrop L. Carter, president; Vasco E. Nunez, vice president; Donald Ramsey, director, and Oscar L. Tacy, director.

Newark Paraffine and Parchment Paper Company of Newark and William J. Eisner, president.

Pittsburgh Wax Paper Company of Pittsburgh.

Paterson Parchment Paper Company of Passaic, N. J., and C. H. Cashmore, president, and F. M. Storr.

Riegel Paper Company of New York City, and John L. Riegel, president; Walter Hamilton, vice president; A. P. Mitchell, secretary and T. F. Donohue and A. J. Ericsson.

Saftee Glassite Paper Company of Philadelphia.

Shawmut Waxed Paper Company of Holliston, Mass., and Arthur W. Moore, president.

Southern Paper Company of New Orleans, and Jules Wolbrette, president.

Waxed Papers, Inc., of Long Island City.

Waxrite Products Company, Inc., of Rochester, and Edgar L. Berkley, president, and M. H. Lipzky.

Dr. H. P. Baker Appointed

President Hugh P. Baker of Massachusetts State College at Amherst, Mass., has recently accepted appointment as a member of a special committee on public domain policies set up by the Chamber of Commerce of the United States, it was announced here.

Dr. Baker served eight years, from 1920 to 1928, as executive secretary of the American Paper and Pulp Association; was manager of the Trade Association Department of the United States Chamber of Commerce, 1928 to 1930; and dean of the New York State College of Forestry from 1930 until he became president of Massachusetts State College in 1933.

Dr. Hugh Potter Baker has been president of Massachusetts State College since 1933. He holds the following degrees: Bachelor of Science, Michigan State College, 1901; Master of Forestry, Yale University, 1904; Doctor of Economics, University of Munich, 1910. In 1933 he received the degree of Doctor of Laws from Syracuse University.

A summary of the positions held by Dr. Baker includes: 10 years with the U. S. Forest Service; professor of forestry at Iowa State College, 1904-07; professor of forestry at Pennsylvania State College, 1907-12; dean and professor of silviculture at the New York State College of Forestry, Syracuse, 1912-20; executive secretary of the American Paper and Pulp Association, 1920-28; manager of the Trade Association Department, U. S. Chamber of Commerce, 1928-30; and dean of the N. Y. State College of Forestry, 1930-32.

He is a Fellow of the American Association for the Advancement of Science; a member of the London Royal Geographic Society; member of the American Geographic Society; member of the Society of American Foresters; member of the German Dendrologischen; member of the Society of Colonial Wars; Sons of the American Revolution; Loyal Legion and the Masons. His biography appears in "Who's Who."

Copco Holds President's Dinner

The President's Dinner of the Central Ohio Paper Company was held December 27 at the Columbus Country Club, Columbus, Ohio, and was as usual a splendid success. The program included remarks by O. A. Miller and A. M. Miller, showing of Copco picnic pictures and dancing which was indulged in from nine to twelve to music by Larry Stember and his orchestra. The program for the dinner included a list of members of the 50 Year Club, the 25 Year Club, the 20 Year Club, and the 15 Year Club.

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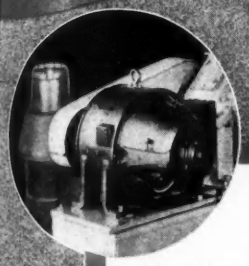

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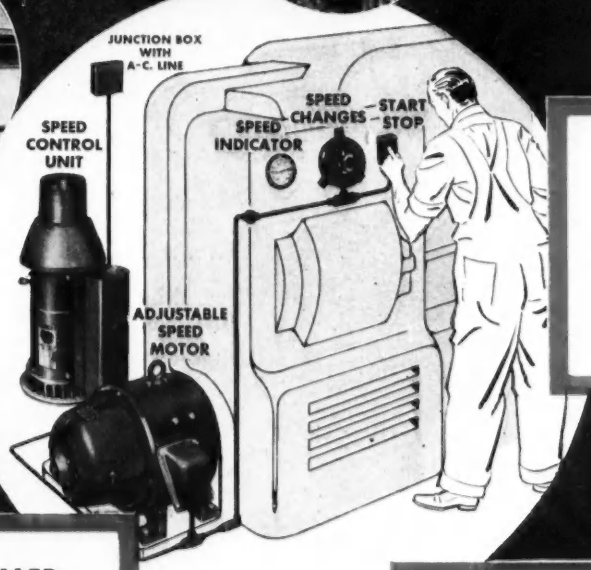

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RELIANCE A-C D-C MOTORS

General Demand for Paper Continues High

Chicago Market Reflects Common Opinion That Current Year Will Be Good With More Orderly Buying — Retailers Expect Rationing Soon — Association Issues Booklet On Salvaging Waste.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., January 12, 1942—Firmly on a war time basis and with lessons of the past few months well learned, the Chicago paper industry looks forward confidently to genuine prosperity within its ranks. Demand is going to be excellent, prices will take into consideration the tremendous increases in cost of doing business and enough ingenuity has developed to indicate that the industry is on its toes. Actually, paper executives are amazed at what they have done when they had to do it. Mills which reported "capacity" in 1940 have developed that "capacity" this past year to an amazing extent and the industry has taken this lesson to heart. Specifically, all lines share in the prospects for a good 1942 and for individual prosperity providing the specific concern meets the challenge confronting it. Groundwoods and newsprints are among those who have "done better than they dreamed of" in a production program, while sulphites of all grades, have found the way to participate in defense and still remain in business. Books and covers, as well as other lines, have been able to prove to buyers that paper will still be available and this has helped to create more orderly buying and thinking. Waste papers continue to feel the benefits of conservation work which is being rapidly extended.

Paper Rationing and Conservation

Illinois retailers seems to expect a rationing order on the paper it uses most any day now. Merchants throughout the State have been asked by scores of retail trade associations to instigate publicity programs designed to really conserve paper. Customers are to be asked to accept merchandise packaged in salvaged boxes and paper, to accept merchandise in original manufacturers' container without additional wrapping and to eliminate all special gift wrapping both in the stores and at home. In other words, the retailers plan to "deliver the goods" but are going to ask Mr. and Mrs. Consumer to get along with fewer non-essentials to "retain civilian morale, and to help the Nation in getting supplies needed to win the war."

Leverone Appointed Waste Administrator

Nathaniel Leverone has been appointed director of the salvage and conservation campaign in Illinois and will likewise be given similar powers in the Chicago metropolitan area which is a separate unit in the defense set up. Mr. Leverone is a brother of L. E. Leverone of the Stein-Hall Company, important suppliers to the paper manufacturing industry. Mr. Leverone will name two committees which will begin the task of educating the public to salvage needs. He has already publicly urged citizens to sell waste to regular dealers or give it to charitable groups. He said the shortage of waste paper is forcing many paperboard mills to operate on curtailed schedules and that cotton rags may be used for paper making and in defense housing construction.

Issue Bulletin on Salvaging Waste

The Illinois Manufacturers Association has also issued a bulletin urging all State manufacturers to salvage all waste material in the interest of national defense. We are rapidly changing over from a 50-50 peace-war economy to a full 100 per cent war economy," says the bulletin. "It is anticipated that if we can maintain the greatly increased production program scheduled for the first quarter of 1942 the country will be fairly over the hump for raw materials and from then on we can settle down to a rapid but much more even pace. Practically all salvage can be reworked or refined into new raw materials. Old newsprint can be reclaimed and rags can be made into fine bond papers."

Sale of Lake Sulphite Co. Approved

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., January 12, 1942—At a special meeting this week of the creditors of Lake Sulphite Pulp Company, both the secured and the unsecured creditors approved by substantial majorities the arrangement whereby Brompton Pulp and Paper Company, will take over the company's operations at Red Rock, Ont.

The vote by secured creditors was $1,342,067 in favor and $50,000 against. Unsecured creditors voted $231,117 in favor and $18,496 against.

G. C. Currie, liquidator, stated it now appeared that the earlier estimate of $1.6 millions owing secured creditors may be increased to $1.8 millions. Unless very substantial damage claims are allowed, it does not appear that claims of unsecured creditors will exceed $500,000.

Under the arrangement $500,000 in Brompton second mortgage debentures was to go to the Lake Sulphite secured creditors on a pro-rata basis. However, the deal calls for additional property which has not yet been acquired by Lake Sulphite. It is thought this additional acquisition will cost not more than $50,000, which will leave $450,000 of the new debentures to be distributed to the secured creditors. On this basis, and if their claims increase to $1.8 millions, they will be paid 25 cents on the dollar.

Unsecured creditors will receive $50,000 in cash, or approximately 10 cents on the dollar.

There is no provision for shareholders under the terms of the deal.

Elected N. E. Traffic Club Officers

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., January 12, 1942—At the annual meeting of the Traffic Club of New England at the Hotel Copley-Plaza, George H. Albee, traffic manager, S. D. Warren Company, was elected one of the vice-presidents for one year and F. J. Gill, traffic manager, Oxford Paper, one of the directors for two years.

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Court Grants Leave to Appeal Abitibi Sale

Supreme Court Justice Expresses Doubt of Correctness of Decision Ordering Sale of Assets of Abitibi Power & Paper Co. — Validity of the Moratorium Act To Be Tested In Renewed Legal Battle.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., January 12, 1942—Leave has been granted by Mr. Justice Roach in Ontario Supreme Court to appeal the order granted in December to permit judicial sale of the assets of Abitibi Power and Paper Company. Work is already under way in preparing the details for the appeal. Just when it will be heard is not certain and a date will have to be set by the court. It is understood, however, that every effort will be made to hasten the appeal hearing and that it may come up in February.

Leave to appeal the order granted in December was asked by D. L. McCarthy, K. C., and Gordon McMillan, K.C., in behalf of the liquidator, R. S. McPherson.

Validity of Moratorium Act Questioned

It is expected that the appeal proceedings will have coupled with them an order holding up the sale which was scheduled to be held Feb. 18.

From the evidence given and the reasons for judgment written by Mr. Justice Roach, it is clear that the major point at issue is going to be the validity or otherwise of the Abitibi Power and Paper Company Moratorium Act passed by the Ontario legislature at its last session. The effect of this act is to stay sale proceedings, subject to specific permission being granted by the Ontario Attorney General, and until December 31, 1942.

In granting the sale order last month, Mr. Justice Middleton had ruled that this act was ultra vires of the province on the general grounds that it conflicted with the Dominion's power under the Winding Up Act.

In his judgment in the leave to appeal hearing, Mr. Justice Roach points out that there are two conditions that can justify granting of leave to appeal. The first of these is the importance of the questions to be decided and on this point the judge has no difficulty in coming to a decision to permit the appeal.

The second point considered, is whether or not "there appears to the judge hearing the application to be good reason to doubt the correctness of the decision or order in question." This, he terms, "the primary essential."

Judge Disagrees with Previous Decision

Mr. Justice Roach concluded on this point "that there is good reason to doubt the correctness of that decision." If proceedings had not been taken under the Dominion Winding Up Act, he holds that the province could have passed the act in question "on the basis that the pith and substance of the act is this—it is legislation postponing the plaintiff's right to proceed in an action in the courts of the province." This is a civil right over which the province has jurisdiction, he claims, calling it "a postponement because the stay thereby imposed will be removed when the term of the act expires" on December 31, 1942.

The recent judgment of the Supreme Court of Canada in throwing out the Alberta Debt Adjustment Act was cited by W. N. Tilley, K.C., appearing for the plaintiff, the Montreal Trust Company, in this case. Mr. Justice Roach, however, sees a difference between the Alberta and Ontario Acts.

He points out that the winding up order obtained in 1932 itself operates as a stay of action in this case because of the provision that no other proceeding can be taken without permission of the court.

"The court having charge of the winding up is a Dominion court," states Mr. Justice Roach, "the court in which this action is pending is a provincial court. The Dominion court having granted leave of the plaintiff to invoke the jurisdiction of the provincial court, I should think that the plaintiff in that forum must submit to such rules and regulations as to procedure as the provincial legislature which has jurisdiction might impose. If that proposition is sound and if the provincial act is an act relating to procedure, then the plaintiff is bound by it."

Legal Battle for Abitibi Assets Continues

And so the great legal battle for the assets of the Abitibi Power and Paper Company proceeds, from out court hearing to another. It prompts the influential *Financial Post* of Toronto, to take a swing at all parties concerned in a double-column front page article in today's issue, in which it states, referring to the tenacity of purpose which has characterized the opposing parties, "It appears a disgraceful episode in Canada's financial and business history, an episode that seems even more out of place when we have a much more important job on hand, the winning of the war."

The Post does not agree with those that use the war as an excuse for postponing a settlement in this case. Instead, it holds that the war is an added reason for achieving a quick and acceptable agreement between the fighting factions. It points out that since the first receivership measures were taken in Sept., 1932, there have been perhaps four or five hundred times that the receiver has had to appear before the courts to get authority for actions that would be handled in the ordinary course of business by a board of directors.

"It is time this nonsense stopped," says the *Financial Post,* "and all those involved in this bitter case realized that they are causing untold waste of time, brains and money that are urgently needed for more important tasks."

This financial publication refers further to the litigation as "what appears to have degenerated into a grim contest for power and control of millions of dollars of assets and properties," and concludes that "a settlement is quite possible provided only that a real spirit of fairness and some slight measure of generosity can be found among those who have established themselves as advocates of the interests of groups that are at present ranged in opposition."

Obituary

A. A. Macdiarmid

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 12, 1942—The death occurred on January 7, of A. A. Macdiarmid, B. Sc., at his residence 90 de Salaberry avenue, Quebec City. Since 1922 Mr. Macdiarmid has been chief engineer of Price Brothers and Company, one of the largest pulp, paper and lumber manufacturing concerns in Canada. He was born in Quebec in 1885 and was educated at Huntingdon Academy and McGill University, Montreal. He began his business career with the Bathurst Lumber Company. Later he joined the Mattagami Pulp and Paper Company and then for a year and a half was with the Anglo-Newfoundland Development Company at Grand Falls, Newfoundland. Then he accepted the position with Price Brothers which he held until his death. Mr. Macdiarmid was a member of the Technical Section of the Canadian Pulp and Paper Association, also of the Engineering Institute of Canada, the Technical Section of the Pulp and Paper Institute, the American Institute of Electrical Engineers, and the Professional Engineers of the Province of Quebec.

Albert F. Williams

Albert F. Williams, who was Chief Chemist of the Parker-Young Company, Lincoln, N. H., died on New Year's Eve. He was born in Gambier, Ohio, on February 27, 1906.

Mr. Williams was a graduate of Kenyon College and received his M. S. degree from the Massachusetts Institute of Technology. After graduation from M.I.T., Mr. Williams joined the Research Department of the Brown Company at Berlin, New Hampshire, and became associated with The Parker-Young Company in 1933. He was an active member of the Technical Association of the Pulp and Paper Industry. Mr. Williams is survived by his widow and two children.

George A. Barnes

Word was received in New York early this week of the death of George A. Barnes, manager of the Moline division of the Newhouse Paper Company, on Thursday, January 8. His death was caused by an automobile accident on December 30 near Macomb, Ill.

Mr. Barnes had been connected with the Newhouse organization for approximately twenty years. He was fifty-one years old and is survived by his widow, Mrs. Ruth Barnes.

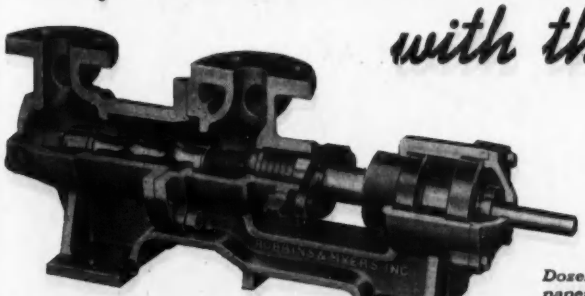
James T. Coleman

James T. Coleman, general superintendent of the Emeryville, Calif., plant of the Paraffin Companies, Inc., died on Saturday, January 3, after a short illness. He had been with Paraffine for twenty-seven years, starting as a machinist and working his way to the top. He had been in full charge of the Emeryville plant since 1938.

Opens New York Office

Harold Kushel has opened sales and buying offices in the Pennsylvania Building, 225 West 34th street, New York. He will transact a general business in paper, board and pulp.

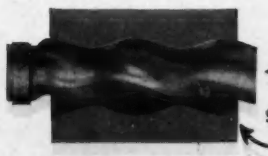
Stop those "PUMPING-TROUBLE" delays with the R & M MOYNO



Dozens of leading paper mills depend on the R & M Moyno for efficient, trouble-free pumping. Actual service records everywhere show cost savings and improved product quality.

ONLY TWO PUMPING PARTS

Here's the patented secret of the efficient, trouble-free performance of the R & M Moyno Pump. A helical rotor revolves within a helical-threaded stator, providing pumping action like that of a piston moving through a cylinder of infinite length. Construction of the Moyno Pump is so simple that it can be dismantled and reassembled in 30 minutes.



With today's demands for all-out production of paper, you can't afford "pumping-trouble" delays in your mill.

Here's the pump that can "take it"—the new R & M Moyno. It's radically different, yet simple in principle . . . handles size, coating or stock without foaming, turbulence or cavitation . . . helps speed your production and improve your product quality.

Keep your mill free from "pumping-trouble" delays, save time and costly maintenance with the R & M Moyno. Write today for Folder No. 1777.

ROBBINS & MYERS • Inc.

MOYNO PUMP DIVISION SPRINGFIELD, OHIO

HOISTS • CRANES • MOTORS • FANS • FOUNDED 1878

Delaware Valley TAPPI Discusses Starch

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry met at the Engineers Club, Philadelphia, Pa., on Tuesday evening, January 6, 1942. Edw. J. Albert of the Thwing-Albert Instrument Company presided as Chairman.

Short Talks on Starch

A group of short talks on starch featured the program. Ray E. Kilty of the A. E. Staley Company discussed coating starches. Mr. Kilty pointed out that much of the prejudice against the use of starch has dropped off in the last twenty years due to the great development of such materials as chlorinated starch and enzyme converted starch. Twenty years ago most starches were merely acid hydrolyzed. He attributed much of the success in the development of starch to the technical men in the mills who have cooperated with the starch companies. Although casein still produces a more waterproof material it is expected that starches will soon have the same property. Casein also produces a somewhat higher gloss, however, this factor is somewhat dependent on the pigment used. To get a pick test equivalent to casein about 20 per cent more starch is required (at high pick tests about 30 per cent more is needed).

Combining Pastes

F. C. Campins of the National Starch Company discussed combining pastes. In this talk Mr. Campins made a number of suggestions that should lead to better operation in the mill. To get the best results starch should be agitated in cooking, especially around 190 deg. F. to have the starch completely cooked at peak consistency. To prevent froth, due to entrained air the starch should be added to water that has been heated to 200 deg. F. If the adhesive tends to lump on the paper, idler rolls should be used to press the starch against the paper or foil. A reduction of consistency will also help. Gaping at the edges can be corrected by using a faster setting starch. The faster setting starches will give the greater coverage.

Enzymes for Starch Conversion

J. J. Thomas of Rohm & Haas discussed enzymes for starch conversion. The primary use of enzymes is to reduce viscosity. In doing this some adhesive strength is sacrified. It is therefore necessary to control the change in viscosity to get just the desired mobility. The degree of conversion is dependent on the following factors: concentration of the enzyme, concentration of the starch, time of the reaction, temperature (160 deg. F.) and pH. The higher the per cent of solids in the starch the less efficient is the conversion. Enzymes and starches are now well standardized therefore good results are obtainable by cooking to a definite viscosity according to an established time and temperature cycle. Though the use of enzymes root and cereal starch properties can be brought fairly close together.

Tub Sizing Starches

J. P. Strasser of the Stein, Hall Company discussed tub sizing starches. No shortage in starches is expected unless starch is developed as a substitute for too many other commodities. Mr. Strasser suggested that a revaluation should be given to the economy of paper production at the present time. Formerly pulp and paper were cheaper than starch and every effort was made to minimize starch use. Today the reverse is true and it is worth while to consider the use of larger percentages of starch in paper. Recently, up to eight per cent starch has been used in paper, the resulting stiff, tinny and brittle character of the sheet being offset by the use of plasticizers and fillers. This provides a way to reduce the use of pulp. By using the higher amount of starch the bursting test is increased, the tear decreased but still satisfactory, the sizing, brightness and opacity and fold are decreased slightly but the stiffness, pick and erasing properties are increased. On a 96 ton machine a $260 daily saving was effected as well as 5.68 tons of pulp.

In the discussion of the four papers it was pointed out that a mixture of starch and casein do not produce as good results as either used separately. Twenty per cent more starch than casein is required to give the same pigment carrying strength. There is a definite difference between glue and starch, their properties are not additive. Better drying of laminated sheets is required of papers to be made into rolls rather than into flat piles. Pound for pound it was pointed out that 13 parts of starch are equivalent to 10 parts of casein. Good printing results are obtainable from starch coated sheets of low pick tests. Synthetic resins contributed to a low pick test but the sheet prints well. Kraft can be covered with an 8 pound clay coat.

Those Who Attended

Those present included: Edw. J. Albert, Roger W. Beales, H. L. Becker, Herman L. Berg, A. L. M. Bixler, S. W. Blanchard, Edward Butts, Jr., Richard Britton, W. J. Burke, Frank Campins, Miss R. M. Karapetoff Cobb, C. M. Connor, J. D. Davis, D. Dieffendorfer, R. H. Dillinger, George A. Farrah, Thomas P. Field, R. M. Gavin, J. D. Gercke, J. F. Good, Lois V. Hans, A. M. Hartley, Jos. C. Hertzle, H. F. Hoffman, Harry Hulmes, Leslie Justin, R. E. Kilty, G. J. King, J. J. Lafferty, R. P. Macdonald, Lewis B. Miller, W. B. Morehouse, Alfred H. Nadelmann, Thomas O'Grady, E. A. O'Neill, Donald D. Pascal, M. Plunguian, C. H. Rice, C. W. Rivise, T. H. Rutt, W. K. Schlotterbeck, Ralph W. Shaffer, Henry C. Speel, E. I. Stokes, J. P. Strasser, R. J. Stuart, Jr., Geo. M. Suydam, J. J. Thomas, R. Tutt, Jr., J. W. Voller, A. E. Waugh.

W. F. Weinpahl Goes To Paper Section

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 14, 1942—William F. Weinpahl has been appointed to the OPA accounting Division of the Paper Section. He has been associated in the book manufacturing, publishing and allied industries since 1917 and has held several executive positions in charge of accounting, production and sales. Previously, he was connected with Alexander Aderer & Company, New York public accountants. Mr. Weinpahl is a native of Brooklyn and is a resident of Cranford, N. J.

Deny Charges

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 14, 1942—Pacific Coast Paper Mills, Inc., Bellingham, Wash., manufacturers of toilet tissues, sanitary napkins, and paper table napkins, have filed an answer to a complaint issued by the Federal Trade Commission charging misrepresentation.

The answer denies that the respondent has represented its toilet tissues, sanitary napkins or paper table napkins as being sponsored or recommended by the medical profession or by physicians generally, but admits that in early advertisements it stated its products were of superior quality and that its toilet tissues were superior to other toilet tissues.

The answer admits that the respondent uses on its products a label in the form of a cross, with the capital letter "M" on one arm and the letter "D" on the other and the fanciful head of a woman wearing a white cap in the center. The answer denies that the woman's head simulates that of a trained nurse or that a period is put after the letter "M" or the letter "D" in the reproduction, although it admits that the respondent's advertising agents have occasionally put such periods after these letters. The answer alleges that this was done contrary to the expressed directions of the respondent not to do so. The answer further asserts that a man's head, appearing in one of the respondent's advertisements is fanciful and denies that it simulates a medical doctor, stating that it might suggest a doctor, a barber, or any other man wearing a white garment and collar and is not a representation that the respondent's product is either recommended or approved by the medical profession or by physicians generally.

The letters "M D," the answer continues, do stand for and sometimes are used as abbreviations for other things than the term "Medical Doctor" and their use on the label on the respondent's paper and paper products does not infer or represent or hold out in any way that the products are recommended, sponsored or approved by the medical profession, and such is not the connotation to the users of its products nor to those who read its advertisements.

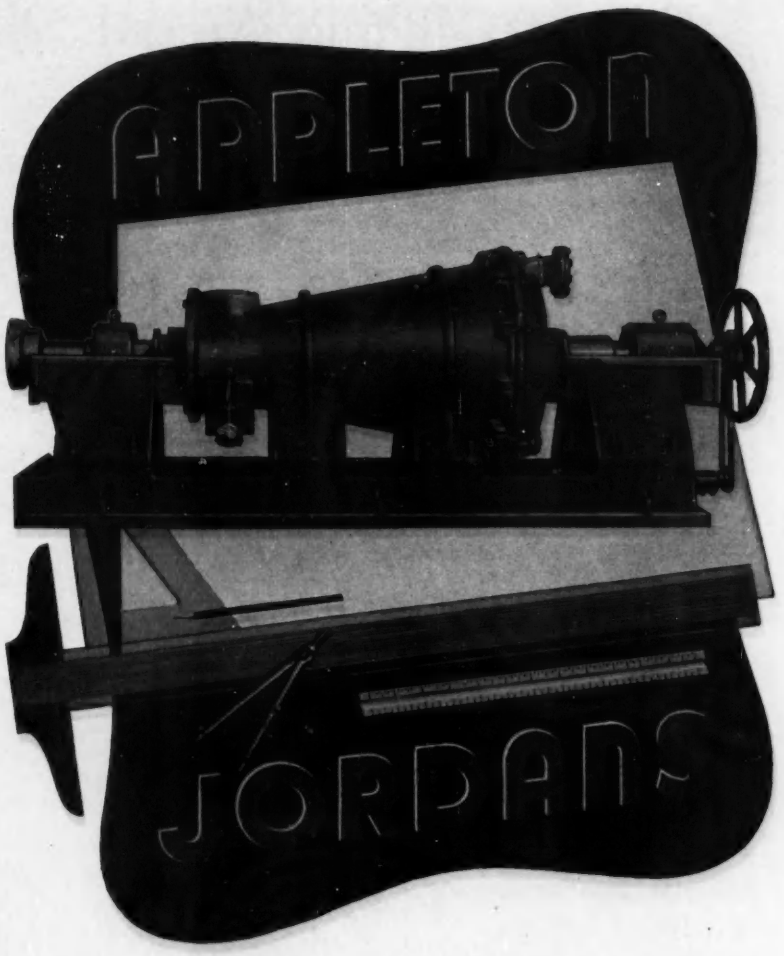
Weight of Newsprint

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 14, 1942—After months of study the Bureau of Customs has just made public a new order to determine the basis of weight of newsprint paper.

In a communication to collectors of customs throughout the country the Commissioner of Customs has sent the following:

"In order to determine the basis weight of newsprint paper, the paper sample shall be conditioned in an atmosphere maintained at 50% relative humidity and 23 degrees C. temperature with a tolerance of plus or minus and of plus or minus 2 degrees C. in temperature."



DESIGNED FOR DEPENDABLE, EFFICIENT AND ECONOMICAL PERFORMANCE ON ALL GRADES OF STOCK UNDER ALL OPERATING CONDITIONS

THE APPLETON MACHINE COMPANY
APPLETON · WISCONSIN

Moisture Proofing Paper

Of widespread interest in the paper trade is a simple process by which any wood pulp paper is treated to make it instantly moisture-proof, opaque and at least 40 per cent stronger, says an announcement sent out by the Wilson Carbon Company.

A cold-cut solution of Vanadiset Plastic Resin 30% and coal tar naphtha 70% is used. Complete impregnation is instantaneous and the drying time very short.

Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 14—Government Printing Office has received the following bids for 200,000 pounds of telephone book news paper in 38 inch rolls: Combined Locks Paper Company, 5.4 cents; Old Dominion Paper Company, 5.498 cents; R. P. Andrews Paper Company, 5.65 cents; Mudge Paper Company, 5.55 cents; Barton, Duer & Koch Paper Company, 5.395 cents; and Cauthorne Paper Company, Inc., 5.15 cents.

For 20,000 sheets of buff railroad board: R. P. Andrews Paper Company, $70.73 per M sheets; and Holyoke Card and Paper Company, $76.40.

For 99,880 pounds of 32 x 50 white sulphite index paper: Whitaker Paper Company, 7.76 cents; and Barton, Duer & Koch Paper Company, 8.5 cents.

For 182,510 pounds of 32 x 48, 50% rag, white index paper: Walker Goulard Plehn Company, 17 cents; Paper Corp. of U. S., 15 cents; and Resolute Paper Products Corporation, 21.5 cents.

LaMotte Service to the Paper Industry

pH Control — Boiler Feedwater Control Chlorine Control

Standard routine tests developed by LaMotte Research Department Promote Better Control of Processes.

pH Control
in the Beaters
in the Sizing
in Filling, Coating and Coloring
in eliminating Deposition of Pitch on wires, rolls and felts
in White water recovery
in Quality of Mill Water Supply
in Finished Paper

Chlorine Control
in Treating Mill Water Supply, etc.

Boiler Feed Water Control
Simplified Outfits for Controlling Treated Water or in Analyzing Untreated Water for:
Total Alkalinity, Chlorides, Dissolved Oxygen, Hardness, Phosphates, pH, Sulphates, etc.

Send for further information.

LaMotte Chemical Products Co.
The Pioneers in the Practical Application of pH Control
Dept. PT Towson, Baltimore, Md.

The Government Printing Office has announced the following paper awards, bids for which were received during the past few weeks.

Old Dominion Paper Company will furnish 300,000 pounds of 38 x 48½, 25% rag, mimeograph paper at 10.02 cents. Cauthorne Paper Company, Inc., will furnish 200,000 pounds same at 11 cents. Paper Corporation of U. S. will furnish 20,000 pounds of 29 x 41 buff offset book paper at 12.2 cents.

Cauthorne Paper Company, Inc., will furnish 100,000 pounds of 34 x 44 white sulphite writing paper at 7.5 cents and the same firm will also furnish 161,500 pounds of 31½ x 48 same at 7.5 cents. Paper Corporation of U. S. will furnish 202,000 pounds of 38 x 48 white offset book paper at 8.95 cents.

Resolute Paper Products Corporation will furnish 40,000 pounds of 25% rag, 32 x 42 buff bond paper at 16 cents and Bulkley, Dunton & Company will furnish 100,000 pounds of 25% rag, 28 x 34 white bond paper at 14 cents. Whitaker Paper Company will furnish 252,000 pounds of 38 x 50 coated book paper at 8.85 cents.

Stanford Paper Company will furnish 100,000 pounds of 25% rag, 8 x 10½ white mimeograph paper at 12.6 cents and the R. P. Andrews Paper Company will furnish 115,000 pounds of 32 x 42 blue sulphite writing paper at 8 cents. Stanford Paper Company will also furnish 40,000 pounds of 25% rag, 34 x 44 white bond paper at 14.6 cents.

Whitaker Paper Company will furnish 70,000 pounds of 25% rag, 34 x 44 white bond paper at 14 cents and the Continental Paper Company will furnish 40,000 pounds of 26 x 38 newsboard at 2.525 cents. Marquette Paper Company will furnish 230,000 pounds of 24 x 38 offset book paper at 7.8 cents.

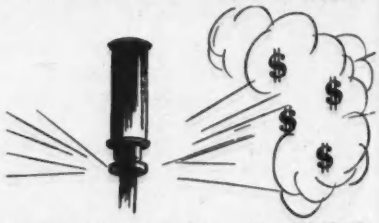
R. P. Andrews Paper Company will furnish 6,900 pounds of 50% rag, 28 x 34 salmon manifold paper at 20.7 cents and the Old Dominion Paper Company will furnish 34,500 pounds of 50% rag, 38 x 48 light weight M.F. book paper at 17.47 cents. R. P. Andrews Paper Company will also furnish 700,000 pounds of 38 x 48 M.F. book paper at 7.227 cents.

Graham Paper Company will furnish 12,800 pounds of 25% rag, 22 x 34 pink bond paper at 14.15 cents and Barton, Duer & Koch Paper Company will furnish 18,000 pounds of 50% rag, 21 x 32 yellow bond paper at 16.15 cents. Walker, Goulard Plehn Company will furnish 10,000 pounds of 25% rag, 23 x 36 buff ledger paper at 15.7 cents. R. P. Andrews Paper Company will furnish 30,000 pounds of 25% rag, 20 x 28 white bond paper at 13.9.

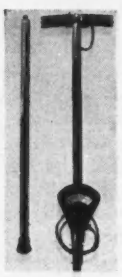
Mudge Paper Company will furnish 1,000 pounds of 100% rag, 22 x 34 white bond paper at 43 cents and the Butler Company will furnish 23,250 pounds of 25% rag, 21 x 32 yellow bond paper at 17.13 cents. Butler Company will also furnish 69,000 pounds of 25% rag, 32 x 42 yellow bond paper at 13.92 cents. National Pulp and Paper Company, Inc., will furnish 320,000 pounds of newsprint paper in 48 inch rolls at 2.9 cents.

Paper Corporation of U. S. will furnish 180,000 pounds of newsprint paper in 48 inch rolls at 3.6 cents and the same firm will also furnish 300,000 pounds of the same in 28 inch rolls at 3.6 cents. Paper Corporation of U. S. will also furnish 36,000 pounds of 25% rag, 34 x 44 white bond paper at 14 cents while R. P. Andrews Paper Company will furnish 60,000 pounds of

STEAM *can cause*



PROFIT *or* LOSS



It's a matter of control. Too little steam slows up paper making. Too much causes paper damage. Control of steam to maintain desired progressive temperature changes in the drying roll train, is assured by the constant use of the Cambridge Surface Pyrometer. This rugged and convenient instrument accurately determines the surface temperature of moving or stationary drying and calender rolls.

Write for bulletin 1945.

The Cambridge is made in a hand model and with the extension attachment to reach those hard-to-get-at places.

CAMBRIDGE INSTRUMENT CO., INC.,
3732 Grand Central Terminal, New York, N. Y.

CAMBRIDGE
SURFACE PYROMETERS

25% rag, 28 x 34 white bond paper at 14 cents.

Chicago Paper Company will furnish 40,000 pounds of 25% rag, 34 x 44 white bond paper at 13.45 cents and Tileston & Hollingsworth Company will furnish 40,000 pounds of white sulphite writing paper in 21 inch rolls at 7.55 cents. Tileston & Hollingsworth Company will also furnish 40,000 pounds of white sulphite writing paper in 36 inch rolls at 7.55 cents.

R. P. Andrews Paper Company will furnish 20,000 pounds of 40 x 53 white offset book paper at 8.4 cents and Maxwell Paper Company will furnish 108,410 pounds of 32 x 54 blue sulphite writing paper at 8.1 cents. Walker Goulard Plehn Company will furnish 63,500 pounds of 50% rag, 24 x 38 white bond paper at 19.55 cents.

Walker Goulard Plehn Company will also furnish 30,000 pounds of 25% rag, 32 x 42 white bond paper at 14 cents and the same firm will also furnish 100,000 pounds of 25% rag, 32 x 42 white paper bond at 14.25 cents and the Virginia Paper Company will furnish 50,000 pounds of 25% rag, same at 13.25 cents.

Paper Corporation of U. S. will furnish 12,253 pounds of 32 x 42 white sulphite manifold paper at 12.8 cents and the same firm will also furnish 36,744 pounds of 38 x 73½ yellow sulphite writing paper at 13 cents. R. P. Andrews Paper Company will furnish 162,500 pounds of 21 x 32 white sulphite manifold paper at 9.8 cents. Paper Corporation of U. S. will also furnish 39,139 pounds of 32 x 42 white sulphite writing paper at 11.9 cents.

Walker Goulard Plehn Company will furnish 19,000 pounds of 25% rag, 24 x 38 pink bond paper at 17.1 cents and the Newton Falls Paper Mill will furnish 122,000 pounds of 28 x 34 white sulphite writing paper at 7.25 cents. Collins Mfg. Company will furnish 100,000 pounds of 25% rag, 8 x 10½ white mimeograph paper at 6.6 cents and Bradner Smith & Company will furnish 50,000 pounds of same at 11.35 cents.

Mayors to Cooperate

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 14, 1942—Emphasizing that the waste paper conservation campaign can be most effective through centralization of its national headquarters, Leon Henderson, Administrator of the Office of Price Administration, today asked the mayors of 20,000 cities and towns to cooperate with the Bureau of Industrial Conservation, Lessing J. Rosenwald, chief, which has taken over this work.

In a letter to the mayors, Mr. Henderson pointed out the necessity of making the waste paper campaign effective immediately, because unprecedented demands upon the wood pulp industry have made the shortage acute.

Responding to Mr. Henderson's original appeal a month ago, mayors in gratifying numbers have furthered the campaign. Reports show wide organization of local committees which have begun systematic collection of paper waste formerly lost through burning.

Commenting on the status of the campaign, Mr. Henderson told the mayors that, while waste paper collections have reached the highest point in history, they still are inadequate. Relief in this situation, he said, is in the hands of local authorities.

TRADE AUTOMATIC MARK

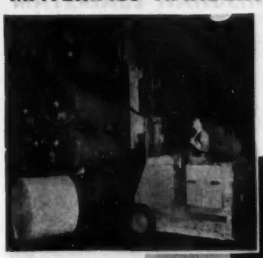
Manufacturers for Over Thirty Years

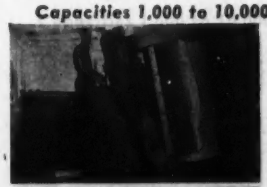
MODERN Electric Propelled INDUSTRIAL TRUCKS

FOR ECONOMICAL MATERIALS HANDLING

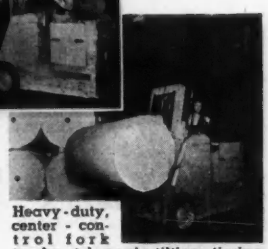
- LOW AND HIGH LIFT TRUCKS
- FORK TRUCKS
- PULP AND BALE HANDLERS
- PAPER ROLL HANDLERS
- LOAD CARRIERS
- TRACTORS — CRANES

Capacities 1,000 to 10,000 Lbs.





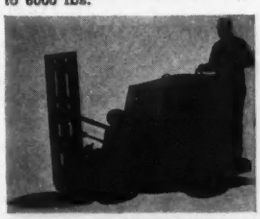
☆ Center-Control 3000 to 6000 lb. capacity motorized revolving paper roll handlers.



Heavy-duty, center-control fork trucks—telescopic tilting, tiering type for low-cost roll storage and transportation. Capacities 3000 to 6000 lbs.

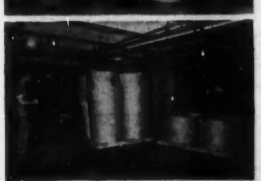
☆ Center-Control 6000 to 7000 lb. capacity heavy-duty, motorized revolving paper roll handlers.

☆ Box-car bale and roll unloader for single tier storage. 1500 to 2500 lbs.



☆ Box-cars can be loaded and unloaded in record time — with motorized roll upender. Capacities up to 3000 lbs.

☆ Cnisel type pulp handlers for box-car loading, unloading and stacking.



☆ 6000 lb. capacity low-lift and high-lift trucks for skid transportation of small rolls and flat stock.

WHEN YOU BUY TRUCKS · · Buy AUTOMATIC

AUTOMATIC TRANSPORTATION CO.

65 W. 87th St. Div. of the Yale & Towne Mfg. Co. CHICAGO, ILL.

CONSTRUCTION NEWS

New Brunswick, N. J.—The Mengel Company, Quentin avenue, manufacturer of fiber and corrugated board shipping containers, etc., has approved plans for new addition to local plant, consisting of a one-story and part basement building, about 60 x 200 feet, to be equipped for large increased capacity. Cost reported over $75,000 with equipment. General erection contract has been awarded to William M. Connolly, Sr., 14 Handy street, New Brunswick, and work is scheduled to be placed under way at once. Main offices of company are at 1122 Dumesnil street, Louisville, Ky.

Los Angeles, Calif.—The Western Waxed Paper Company, 910 East 61st street, manufacturer of waxed and other processed paper stocks, has completed plans for new one-story addition, to be used for storage and distribution service. Plans have been filed and erection will proceed at early date. No estimate of cost announced. Dr. R. Warren, Architects' Building, Los Angeles, is consulting engineer.

Rochester, N. Y.—The Haloid Company, 9 Haloid street, manufacturer of processed photographic papers and other special paper stocks, has superstructure under way for new one-story addition to mill, previously referred to in these columns, to be about 40 x 250 feet, and will have building ready for equipment installation in near future. It is reported to cost in excess of $85,000, with machinery. John Luther & Sons Company, 87 Stillson street, Rochester, has the general erection contract. S. Firestone, 59 South avenue, Rochester, is architect and engineer.

Grand Rapids, Mich.—The Tanglefoot Company, 314 Straight avenue, manufacturer of fly paper and other special paper stocks, has awarded general contract to F. W. Burgstahler & Sons, 1235 Third street, N.W., Grand Rapids, for alterations and improvements in plant. Work will be placed under way at once. No estimate of cost announced. Company has taken out a State charter for a subsidiary interest, known as the O. & W. Thum Company, to deal in fly papers and other special stocks, to operate with nominal capital.

New York, N. Y.—The Ashland Corrugated Paper Products Company, Inc., a new organization in city, to manufacture and deal in corrugated boxes and containers, and other corrugated paper goods, has leased the ground floor and basement in building at 138-44 West Twenty-fifth street, and will occupy at once for new plant and company headquarters, with storage, distribution and other operating facilities.

Polson, Mont.—Plans are maturing for proposed new pulp mill at Polson, referred to in these columns some months ago, and site for plant has now been selected, with option to purchase in near future. Plans for financing are in progress and it is expected to develop a fund of about $2,000,000 for project. Plant will comprise several large one and multi-story units, equipped for extensive capacity, with storage and distribution buildings, power house, machine shop, office building and miscellaneous structures. It is estimated to cost close to the amount noted. A new company will be organized to construct and operate the mill as soon as final plans are consummated. T. R. Delaney, Polson, is attorney for interests identified with the project, including Lloyd Helmer and L. L. Marsh, both of Polson. L. A. DeGuerre, Wisconsin Rapids, Wis., paper mill engineer, has been engaged to make surveys and plans for the plant.

Chicago, Ill.—Eugene Dietzgen Company, 950 Fullerton avenue, manufacturer of sensitized blue print papers, and other ruled and special papers for drafting room service, drawing materials, etc., has completed plans for new addition for increased capacity, to be four-story, about 31 x 85 feet, estimated to cost over $85,000, including equipment. General erection contract has been awarded to the Austin Company, 510 North Dearborn street, and work is scheduled to be placed under way at once. Lawrence Monberg, 232 East Erie street, Chicago, is architect.

New York, N. Y.—The Alliance Paper and Twine Company, 12 West 21st street, wrapping and other paper stocks, has leased the ground floor and basement in building at 13-15 East Twenty-second street, and will occupy at early date for company headquarters and operations, including storage and distribution.

Berlin, N. H.—The Personal Products Corporation, Milltown, N. J., manufacturer of tissue paper stocks, a subsidiary of Johnson & Johnson, New Brunswick, N. J., manufacturer of drug and chemical specialties, is purchasing equipment for new branch mill to be erected at Berlin, previously mentioned in these pages. Contract for two 142-inch tissue paper machines has been let to Bagley & Sewall Company, Watertown, N. Y., and orders for other mill requirements will be placed soon. Work on plant is being placed under way. No estimate of cost has been announced.

Fort William, Ont.—The Great Lakes Paper Company, Ltd., Fort William, manufacturer of newsprint, has plans under way for new one-story addition, to be used for expansion in digester department, including extensions in blow pit facilities. Cost is reported close to $85,000, including equipment. It is proposed to begin work soon.

New Companies

New York, N. Y.—George Poalicelli & Co., Inc., has been incorporated with capital of $10,000, to deal in paper products of various kinds. New company is represented by Robbins Stationer, 25 Warren street, New York, incorporating agent.

Wilmington, Del.—The Norstrand Corporation, care of United States Corporation Company, Dover, Del., representative, has been chartered under State laws, with capital of 1000 shares of stock, no par value, to manufacture paper and paper board products, wood pulp, etc. Leif B. Norstrand, Scarsdale, N. Y., is principal incorporator and will head new organization; Kenneth H. Murray, Barnardsville, N. J., is interested in new company.

New York, N. Y.—The Highway Salvage Company, Inc., has been organized to deal in waste paper goods of all kinds. New company is represented by Friedland & Friedland, 291 Broadway, New York, attorneys.

Harvey Adopts Group Program

The Harvey Paper Products Company, manufacturer of paper products, of Sturgis, Mich., has adopted a group program which provides sickness and accident, hospital expense, and surgical operation benefits for its employees, and hospital expense benefits for their dependents. Announcement of the plan was made by James G. Van Horn, president of the company.

The group plan is being underwritten by the Metropolitan Life Insurance Company on a cooperative basis whereby the employees contribute fixed amounts and the employer bears the balance of the entire net cost.

Under the terms of the plan, employees will receive $10.50 a week in case of sickness or non-occupational injury. In the event of hospitalization they will be paid $4 a day for a maximum period of 31 days. Employees with dependents, covered by the plan, receive dependent hospital expense benefits of $3 a day, also for a maximum period of 31 days. Surgical operation benefits for employees range up to $150. The plan also includes visiting nurse care and the distribution of pamphlets on health conservation and disease prevention.

Stewart MacDonald Goes to Mexico

BOSTON, Mass., January 12, 1942—Stewart MacDonald, of the local office of the Pejepscot Paper Company, has gone to New Mexico for a year on account of his health.

A Correction

J. K. Galbraith, assistant administrator of the Office of Price Administration, Washington, D. C., writes as follows:—

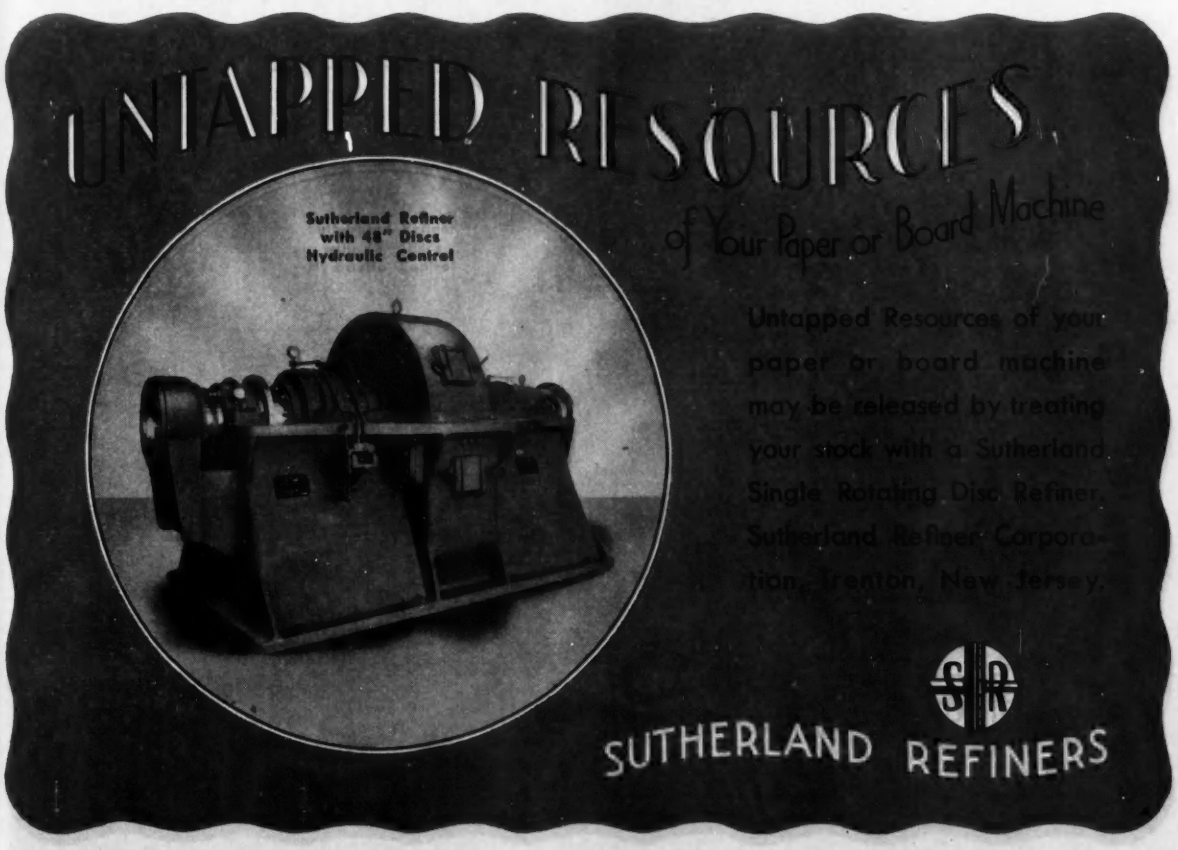
"On page 29 of the issue of the PAPER TRADE JOURNAL of December 18, 1941, you printed the official press release sent out by this office covering agreements reached by the Office of Price Administration and sixteen principle manufacturers of kraft paper. In paragraph 6 of that story, where you printed the definition of 'imitation kraft wrapping paper', we note a typographical error which you might like to correct in your next issue. Our definition reads as follows:

" 'Any wrapping paper containing more than 50% waste materials (including broke) which tests 89% or less of the basis weight, Mullen Test, under standard TAPPI testing procedure.'

"You printed this '39%' instead of 89".

More Pulpwood Cut in Nova Scotia

MONTREAL, Que., January 12, 1942—Hon. J. H. McQuarrie, Minister of Lands and Forests for Nova Scotia in a review of the forest industry in Nova Scotia in 1941, says it was one of great activity when the cut of all kinds amounted to more than 520 million board feet, valued at over $15,000,000, of which total sawn lumber comprised 400 million board feet and pulpwood about 172,000 cords. Most of this last-named was manufactured into newsprint and pulp in Nova Scotia.


UNTAPPED RESOURCES
of Your Paper or Board Machine
Sutherland Refiner with 48" Discs Hydraulic Control
Untapped Resources of your paper or board machine may be released by treating your stock with a Sutherland Single Rotating Disc Refiner. Sutherland Refiner Corporation, Trenton, New Jersey.
SUTHERLAND REFINERS

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending January 14, 1942

	High	Low	Last
A. P. W.	1¼	1¼	1¼
Armstrong Cork Co.	26	25⅛	26
Celotex Corp.	7⅞	7⅝	7⅞
Celotex Corp., pf.	70	70	70
Certain-Teed Products Corp.	2⅜	2⅛	2⅛
Certain-Teed Products Corp., pf.	27¾	26	27⅛
Champion Paper & Fibre Co.	16½	16¼	16½
Champion Paper & Fibre Co., pf.	100	100	100
Congoleum-Nairn Co.	16½	15⅞	16⅛
Container Corp. of America	13½	12⅞	13¼
Continental-Diamond Fibre Co.	8	7⅝	8
Crown-Zellerbach Co.	11⅜	10⅝	11⅜
Crown-Zellerbach Co., pf.	88	87½	88
Flintkote Co.	9¾	9½	9¾
Robert Gair	2¼	2⅛	2⅛
Robert Gair, pf.	10¾	10⅛	10¾
International Paper Co.	15⅝	14⅜	15
International Paper Co., pf.	60½	58⅞	60
Johns-Manville Corp.	59¾	57	59¾
Johns-Manville Corp., pf.	124	122	124
Kimberly Clark Corp.	29	28⅜	29
MacAndrews & Forbes	23¼	22½	23¼
MacAndrews & Forbes, pf.	130	129	129
Masonite Corp.	26¾	26	26
Mead Corp.	6¾	6	6¾
Mead Corp., pf.	70	70	70
Paraffine Companies, Inc.	23	23	23
Paraffine Companies, Inc., pf.	99	99	99
Rayonier, Inc.	11	10⅛	11
Rayonier, Inc., pf.	25⅝	25	25¼
Ruberoid Co.	17⅞	17⅜	17⅞
Scott Paper Co.	36½	36¼	36¼
Scott Paper Co., pf.	107	106½	107
Sutherland Paper Co.	....	....	....
Union Bag & Paper Corp.	9	8½	8⅞
United Paperboard Co.	3¼	3¼	3¼
U. S. Gypsum Co.	46¾	44⅜	46¼
U. S. Gypsum Co., pf.	170	170	170
West Virginia Pulp & Paper Co.	17¾	16½	16½

New York Curb Exchange

High, Low and Last for Week Ending January 14, 1942

	High	Low	Last
American Box Board Co.	3¾	3¾	3¾
Brown Co., pf.	....	....	....
Great Northern Paper Co.	35	33⅞	33⅞
Hummel-Ross Fibre Corp.	5¼	5	5¼
National Container Corp.	10½	9½	10½
St. Regis Paper Co.	2	1⅞	1⅞
St. Regis Paper Co., pf.	117¼	117¼	117¼
Taggart Corp.	2⅜	2¼	2⅜

Champion Earns $2.11

The Champion Paper and Fibre Company and subsidiaries for the twenty-eight weeks to November 9, reports a net profit after $2,181,500 tax charges, of $1,452,000, equal, after dividend requirements on 6% preferred stock, to $2.11 each on 550,000 shares of common stock. Net profit for twenty-eight weeks to November 10, 1940; was $1,176,747, or $1.62 a common share.

Puget Sound Votes Dividend

A dividend of 50 cents a share on the common stock of the Puget Sound Pulp and Timber Company was declared January 2 by the company's board of directors, payable January 28, 1942, to stockholders of record January 14, 1942. This payment continues the quarterly rate which was in effect during 1941, a total of $2 a share having been disbursed in four quarterly payments last year.

Western Tablet Nets $2.49

The Western Tablet and Stationery Corporation for the year to October 31, reports a net income of $504,158, equal after preferred dividends to $2.49 each on 134,854 common shares, against $525,825, or $2.65 a common share, in preceding fiscal year.

Dryden Makes Good Report

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 12, 1942—At the annual meeting of the Dryden Paper Company in Montreal, F. A. Sabbaton, president, stated that prospects for the coming year were very favorable and, if existing conditions prevailed, earnings should show the same ratio of increase as last year. In the year ended September 30, 1941, net earnings, before depreciation, depletion and profit taxes, was $328,612 against $215,257 in the preceding year.

Mr. Sabbaton pointed out, however, that new digester equipment is needed and has been sought, but, due to metal shortage, no digester plates have been made available to the company.

Answering a shareholder's question, Mr. Sabbaton stated that the dividend policy of the company would depend entirely on existing conditions in the country and to the amount necessary for excess profits taxes. If higher than last year then chances of dividends were slim, but if unchanged the directors would use their best judgment in the matter. He also stated that it would be wise to conserve resources for a "rainy day" that would follow the readjustment period after the war.

Reports were adopted and directors were re-elected.

Lake St. John to Pay Interest

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 12, 1942—An announcement by the Lake St. John Power and Paper Company states that interest on the 5% mortgage debentures in respect of the year 1941 will be paid on April 1 to debenture holders of record March 17. Payment of the 5% on the $3,527,500 of debentures now outstanding will involve the sum of $176,375.

In accordance with the terms of the reorganization carried out in 1936, interest accruing on the debentures becomes a fixed charge after December 31, 1941, payable half yearly on Jan. and July 1, the first payment to be made on July 1, 1942.

St. Lawrence Cancels Stock

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 12, 1942—The St. Lawrence Corporation has advised the Montreal Stock Exchange that an additional 3,840 shares of class "A" preferred stock have been cancelled in accordance with a resolution passed by the board of directors of the company authorizing this cancellation. This leaves a balance of 289,477 preferred shares outstanding.

Donnacona Merges Common Shares

MONTREAL, Que., January 12, 1942—The Donnacona Paper Company, with approval of the shareholders and sanction of the government authorities, has abolished "A" and "B" shares and merged them into one class, the holders having one vote for each share held. Previously the "A" shares had exclusive voting rights.

Rota-Matic Controller

The Rota-Matic Controller is designed for the automatic control and permanent chart record of liquid or gas flow rates. It is especially valuable for measuring and controlling flows of viscous and corrosive fluids, such as fuel oils, sulphuric acid, caustic, hot tar and organic liquids.

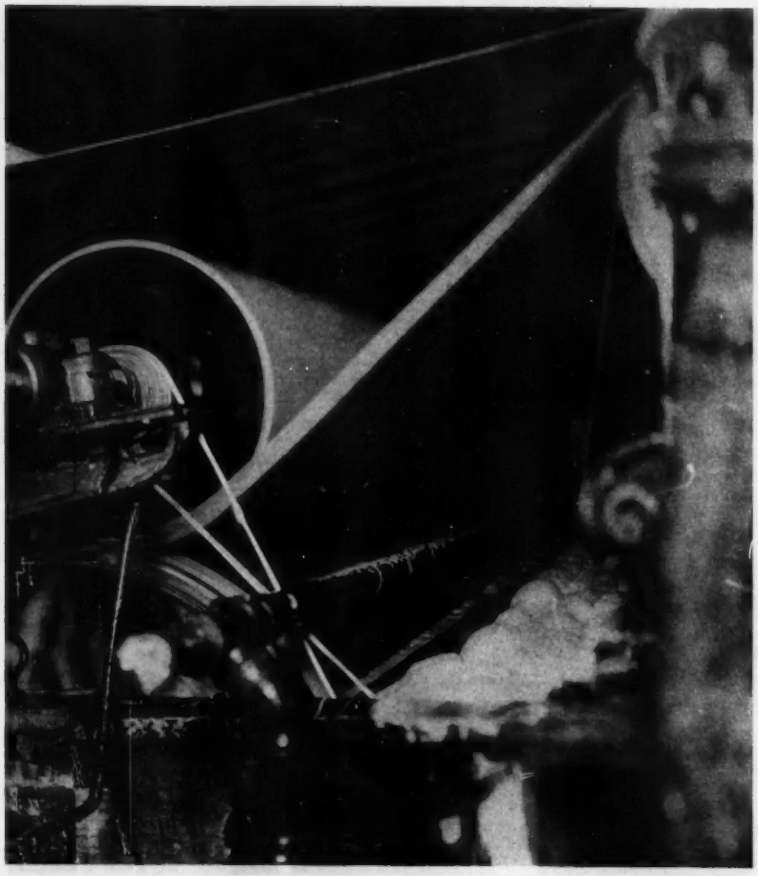
Its features include all the advantages of the standard rotameter flow rate instrument, plus completely automatic flow control; control point adjustable to any point over the entire flow range of the rotameter; 150% throttling range and automatic reset for synchronizing to process lags and load changes; flow controlled directly from remote panel-mounted instrument; permanent record of flow provided; indication of flow rate at rotameter itself in case of power failure.

The rotameter float position is transmitted to the recorder pen arm through the use of a self-balancing induction bridge. When the recorder pen arm is not at the same position as the control index arm, a flapper changes the air pressure within a bellows type control system. The changed air pressure opens or closes a diaphragm motor control valve in the flow line to bring the rate of flow back to the desired control point and to keep it at that point.

The meter is made with indicating-controlling, recording-controlling or recording-integrating-controlling features to suit any specific requirements. The Rota-Matic can also be used to control the quantity of one flow in constant ratio to the amount of another flow. In addition, time cycle variations of control point are possible with this flexible controller. Catalog section 51-B giving complete details may be obtained from the Fischer & Porter Company, Hatboro, Pa.

Vote Against Sunday Work

HOLYOKE, Mass., January 12, 1942—Following the installation of officers at a meeting of the Eagle Lodge of Papermakers last week, the members held a business meeting and voted not to accede to the wishes of the manufacturers in sanctioning Sunday work. This extra day's operation was proposed by the six local mill owners as part of the national defense program. The lodge members proposed an unrevealed Sunday work program which was not acceptable to the mill owners and another stalemate arose between the two factions.



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C. K. BEECHER Delaware, Ohio
O. J. LELOFF Vancouver, Wash.

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger

EDITOR

Vol. 114 January 15, 1942 No. 3

COMING EVENTS IN PAPER INDUSTRY

AMERICAN PAPER AND PULP ASSOCIATION, Sixty-fifth Annual Convention and meeting, Waldorf-Astoria Hotel, New York, February 16-20.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Convention, Commodore Hotel, New York, February 16-19.

SALESMEN'S ASSOCIATION OF THE PAPER INDUSTRY, Annual Meeting and Luncheon, Waldorf-Astoria Hotel, New York, Tuesday, February 17.

NATIONAL PAPER TRADE ASSOCIATION OF THE UNITED STATES, Convention, Waldorf-Astoria Hotel, New York, February 16-19.

THE NEW YORK ASSOCIATION OF DEALERS IN PAPER MILLS' SUPPLIES, Annual Banquet, Commodore Hotel, New York, Tuesday, February 17.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

NON-ESSENTIAL SPENDING

At this critical time when business concerns and all citizens are asked to effect economies in their expenditures and extend more aid to the war effort, it seems entirely reasonable to expect the Administration to do what it can to save on unessential appropriations. As Congress begins consideration of appropriations for the next fiscal year, the question of economy in the Federal Government comes forward for more serious discussion. The recommendations of Senator Byrd, the Chamber of Commerce of the United States, the National Association of Manufacturers and many other individuals and associations, have pointed out why and how economy in unessential expenditures can and should be made.

In the first Joint Committee Report on Reduction of Non-Essential Federal Expenditures, recommended savings for the next fiscal year beginning July 1, total $1,301,075,000. The items follow: abolishment of the Civilian Conservation Corps, $246,960,000; National Youth Administration, $91,767,000; reduction of appropriations in the Works Projects Administration, $400,000,000; reduction in the agricultural program, $230,622,000; deferments in public works, $161,726,000; and cancellation of farm loan authorizations, $170,000,000. Senator Byrd, chairman of the Committee, has expressed hope that reductions will result in a saving of more than one and one-half billion dollars. The Committee report states: "Before the war, economy in non-essential spending was important. Now it is vital. There is no room for non-essentials in a government stripped for action. Our united purpose is to produce sufficient armament and trained personnel to win this war. Nothing can be permitted to interfere with this objective. The American people are being asked to pay extremely burdensome taxes which will become greater; they are being asked to make great sacrifices and endure hardships. The government should set the example".

An excellent analysis of the subject has just been published, in booklet form, by The Brookings Institution, Washington, D. C., entitled "Curtailment of Non-Defense Expenditures", by Henry P. Seidmann. After discussing defense and non-defense expenditures, the growth of non-defense expenditures and national income, suggestions are made for reductions. The conclusion is expressed on the possibility of transferring cost to States as follows: "Our analysis leads to the conclusion that state and local need for federal assistance is in no way comparable to what it was in 1935-37. The marked upward trend in revenues, together with the tendency of expenditures to flatten out, has resulted in an over-all improvement in state and local finances that may be conservatively estimated at more than 5%. If the increased ability of these governments to finance public activities is placed at 5% of their tax receipts (exclusive of state unemployment taxes or contributions), and this appears a reasonable assumption, the states and localities should be able to finance activities, in the amount of more than 400 millions, for which funds have been provided by the federal government. On a conservative basis, non-defense grants to the states and federal WPA outlays could be reduced by 300 millions."

In its concluding chapter the book states in part: "The foregoing analysis indicates that it is possible to reduce federal expenditures for non-defense purposes by more than two billion dollars. The suggested reductions, by major classes of expenditures, are as follows, in millions of dollars: Flood control, rivers and harbors, and other water projects, 350; agriculture, 625; public domain, 19; public welfare, 615; highway development, 171; executive and other general activities, 5; transfer of costs to state and local governments, 300; total, $2,085,000,000. Since the present fiscal year (1942) is half over, it is apparent that the full amount of the savings here recommended cannot be realized during the present fiscal year. These reductions should, however, be fully achieved in the ensuing fiscal year; indeed, there is reason for believing that, as the war program intensifies, it will be possible to make still further reductions in federal expenditures not directly related to the war.

Continuing, the opinion is expressed that, "A drastic curtailment of all non-essential expenditures is of the utmost importance from the standpoint of the war program, as well as from the fiscal point of view. Government expenditures for non-essential activities should not be allowed to compete with the government's war program any more than private expenditures for non-essential purposes should not be

allowed to compete with war requirements. The government can set an example for the people in this critical hour by practicing the rigid economies which the national situation imperatively requires. To carry out a systematic program of retrenchment in non-defense expenditures in such a way as to secure maximum reductions with minimum disturbances to our economic life will require continuous scrutiny by the Congress. To this end it is here recommended that permanent bi-partisan committee of the Senate and the House be vested with continuing responsibility for analyzing expenditures, both for non-defense and for war purposes."

In commenting on the above report, the *Washington Review,* published by the Chamber of Commerce of the United States says in part: "Considering the huge sums which are being expended by our federal government, this competent, independent survey of the possibilities of non-defense economies is an important addition to the recent official report submitted to the President and the Congress of the United States by the Joint Committee on Reduction of Non-Essential Federal Expenditures, established under the last revenue act. With federal deficits and the debt burden mounting at unprecedented rates, three methods of limitation are suggested: confine defense costs to 'the indispensable requirements for the kind of war in which we are engaged'; increase taxes; or curtail non-defense expenditures. The Brookings report deals with the final possibility, which until recent months has been largely ignored."

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1941		Corresponding Weeks, 1940	
November 29	107.6	November 30	84.4
December 6	107.0	December 7	85.3
December 13	105.7	December 14	88.3
December 20	107.0	December 21	88.5
December 27	80.0	December 28	61.4
January, 3, 1942 (Prelim.)	*102.8*	January 4, 1941	80.8

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1940	89.1	84.7	82.3	84.3	90.0	92.1	85.3
1941	85.6	89.7	92.2	96.0	98.7	99.5	94.8

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1940	85.1	81.5	85.5	84.9	80.9	85.6
1941	101.8	99.6	105.1	106.0	*100.7*	*97.4*

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941
Year Average..	69.9	80.4	79.8	71.5	83.4	85.6	*97.4*

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	62	67	67	70	69	70	69	75	78	82	80	74	72
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	82	83	84	88	86	94	94	99	98	*93*	*88*

Week ending Nov. 29, 1941—101
Week ending Dec. 6, 1941—102
Week ending Dec. 13, 1941—101
Week ending Dec. 20, 1941—101
Week ending Dec. 27, 1941— 76
Week ending Jan. 3, 1942—*86*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

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OF AMERICAN PULP

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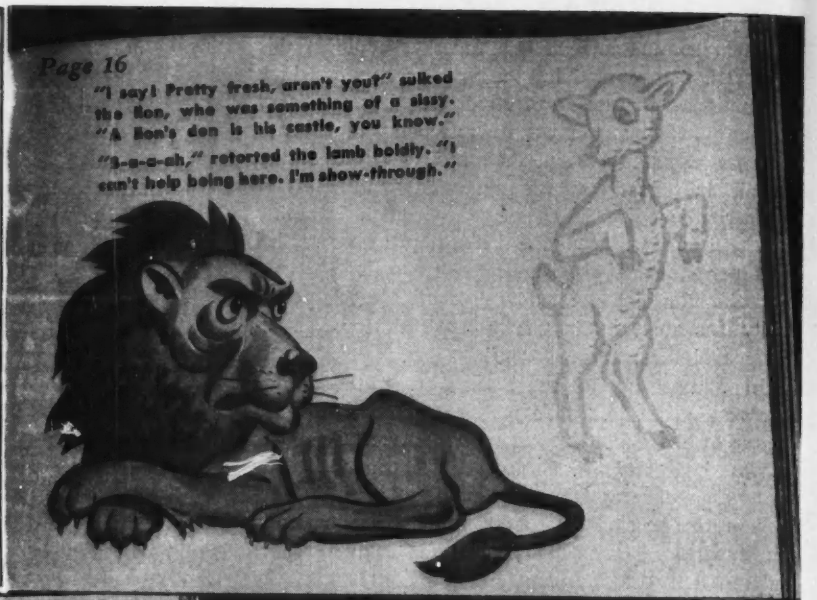
SOUTH AMERICA
AND ALL WORLD MARKETS

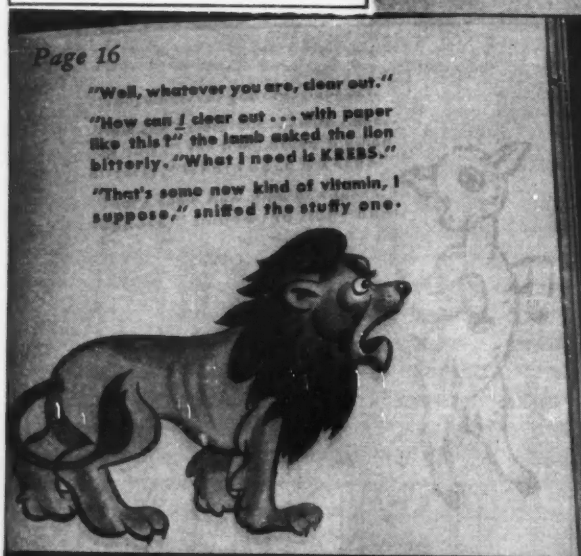
LYDDON
& COMPANY
(AMERICA) INC.

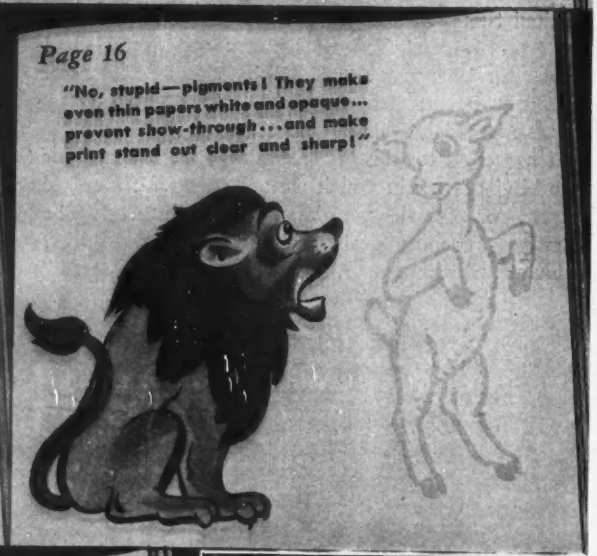
51 EAST 42ND STREET
NEW YORK CITY

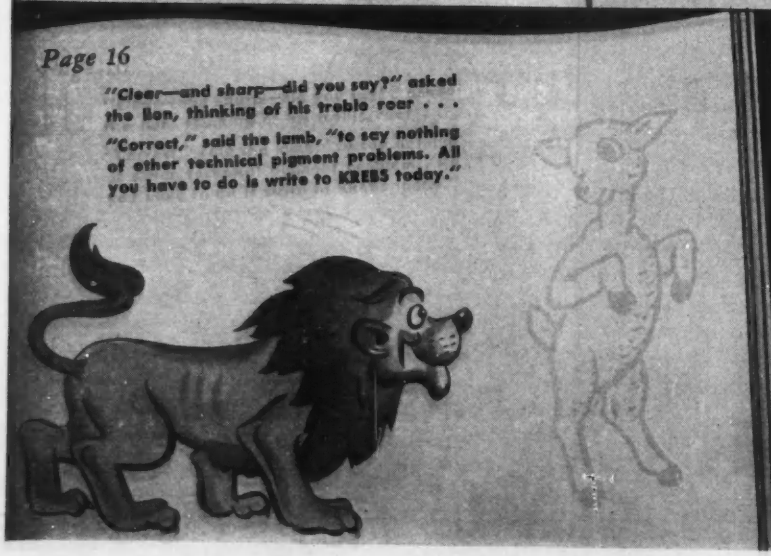
"YOU MIGHT KNOCK BEFORE YOU COME IN"

said the lion
on page 16
to the lamb
on page 17


Page 16
"I say! Pretty fresh, aren't you?" sulked the lion, who was something of a sissy. "A lion's den is his castle, you know."
"B-a-a-ah," retorted the lamb boldly. "I can't help being here. I'm show-through."


Page 16
"Well, whatever you are, clear out."
"How can I clear out . . . with paper like this?" the lamb asked the lion bitterly. "What I need is KREBS."
"That's some new kind of vitamin, I suppose," sniffed the stuffy one.


Page 16
"No, stupid—pigments! They make even thin papers white and opaque... prevent show-through . . . and make print stand out clear and sharp!"


Page 16
"Clear—and sharp—did you say?" asked the lion, thinking of his treble roar . . .
"Correct," said the lamb, "to say nothing of other technical pigment problems. All you have to do is write to KREBS today."

Take a tip from me if you're troubled with "show-through": *write KREBS today.* For these pigments help keep your paper white and opaque—they keep the printing clear and sharp on its own side of the page. And KREBS will lend a hand with other technical pigment problems, too.

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KREBS PIGMENT AND COLOR CORP.
1007 Orange Street, Wilmington, Del.

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Cupri-Ethylene Diamine Disperse Viscosity of Cellulose*

By F. L. Straus[1] and R. M. Levy[2]

Abstract

A rapid method of determining the disperse viscosity of cellulose is presented. The method employs a saturated solution of cupric hydroxide in aqueous ethylene diamine as the cellulose solvent and test apparatus of a simple nature. The solvent and its cellulose solutions were found to be stable. The test gives exceedingly accurate and easily reproducible results, excelling the cuprammonium methods in this respect. A thorough study of the nature of the solvent, accompanied by about three thousand viscosity determinations has explained former failures in the use of this solvent for viscosity tests.

The classic cuprammonium viscosity determination of cellulose has, by far, received the most attention in previous investigations and is the most widely used in industry; however, the difficulties associated with the preparation and use of this solvent have tended to discourage its use in the cellulose industry. The preparation of the cuprammonium solutions, according to the standard methods *(1, 3, 4, 10, 12, 18)* is tedious. The solutions must be adjusted to a definite copper, ammonia, and nitrite content, and also, must be preserved in the dark, under an atmosphere of nitrogen, near a temperature of 20 deg. C. The dissolving of the cellulose must be carried out in the absence of air and light for periods up to 24 hours, at a temperature which should not vary a great deal from 20 deg. C.

Many attempts have been made to overcome the difficulties connected with the use of cuprammonium solutions, and to develop rapid viscosity tests by modification of the standard methods *(6-8, 15)*, a number of which are known to exist in technical practice without being described in the literature. Although an appreciable amount of work has been done, and much data obtained, the inconvenience connected with the use of these solutions is due to the chemical nature of the solvent itself.

Solvents for cellulose of a chemical nature completely different are phosphoric acid and Triton F. Both have been recommended for use in viscosity tests *(16, 17)*. Phosphoric acid has not found extensive use as a solvent due to the high rate at which cellulose degradation occurs in these solutions. Triton F may prove to be an ideal solvent for cellulose viscosity determination in the future; however, at present it is not manufactured in commercial quantities, and its use on a broad scale is impossible. It was also found that the solution time in this solvent may be as high as 6 hours for an unmodified cellulose.

Methods based on the esterification of the cellulose and the solution of these esters in organic solvents are quite complex and their accuracy is limited *(5, 14)*.

Traube *(19)* was the first to make a systematic study of the action of cupri-1,2 diamines on cellulose. He found that the solvent power of aqueous ethylene diamine, saturated with cupric hydroxide, was comparable to that of cuprammonium solutions. The compound formed in the absence of cellulose contained ethylene diamine and copper in the exact molar ratio of 2:1, independent of dilution, and could be represented by the formula: $CuEn_2(OH)_2$[3]. Jolley *(11)* doubts the validity of Traube's experimental results and gives values ranging from 1.78 to 1.89 for the molar ratio of ethylene diamine to copper, dependent on the concentration of the complex, and states that the excess of copper is presumably present as the cupri-monoamine: $CuEn(OH)_2$. The existence of free ethylene diamine was also postulated by him. However, the results obtained by Traube are correct. The compound contains ethylene diamine and copper in the molar ratio of 2:1, regardless of dilution.

Nilsen *(13)* made a previous attempt to utilize cupri-ethylene diamine solutions as solvents for viscosity measurements. Many of his observations could be confirmed; however, his analytical methods being inadequate for this purpose, he overlooked the significance of the fact that the solutions must be saturated with cupric hydroxide, and consequently came to unfavorable conclusions regarding their solvent power.

Solvent Preparation

Cupric Hydroxide

Two hundred fifty grams of copper sulphate

* Contribution from the Research Laboratories of the Ecusta Paper Corporation, Pisgah Forest, N. C.

[1] Member TAPPI, Director of Research, Ecusta Paper Corporation, Pisgah Forest, N. C.

[2] Chief Research Chemist, Ecusta Paper Corporation, Pisgah Forest, N. C.

[3] The symbol En is used to represent the ethylene diamine molecule, $NH_2CH_2CH_2NH_2$.

($CuSO_4 \cdot 5H_2O$) are dissolved in 3 liters of distilled water (80-90 deg. C.) containing 0.5 cc. of concentrated sulphuric acid. The solution is then cooled to 50 deg. C., and concentrated ammonia (sp.gr. 0.90) is slowly added until the precipitation of the basic sulphate is complete. (Approximately 105 cc. are required.) Any excess of ammonia should be neutralized with sulphuric acid.

The precipitate is very thoroughly washed with distilled water by decantation. Eight hundred fifty cubic centimers of a 20% sodium hydroxide solution are then added, the temperature being kept below 25 deg. C. to prevent the formation of black cupric oxide. The blue cupric hydroxide is washed by decantation until free of OH^- and SO_4^{--} ions.

Cupri-Ethylene Diamine Solution

The cupric hydroxide, in a 5-liter round-bottom flask, is drained free from excess water, and 150 cc. of a 70% ethylene diamine[4] solution are added. The solution is allowed to stand 12 to 15 hours under an atmosphere of nitrogen; the excess cupric hydroxide can then be filtered off in the open. Allowing the solution to stand over an excess of cupric hydroxide, as mentioned, is an essential condition in the preparation of a suitable solvent. It must be emphasized that the solvent power of the cupri-ethylene diamine solution drops off to an astonishing degree if an excess of ethylene diamine, over that required for the molar ratio of 2 (amine to copper), is present.

The solution is stable in the presence of atmospheric oxygen up to periods of 12 hours. After this time, cuprous oxide is slowly deposited; hence solutions were stored, under nitrogen, in a bottle as shown in Fig. 1. This type of an arrangement also serves as a convenient container for removing portions of the standardized solvent for the viscosity determination.

Standardization of Solvent

The decomposition of the cupri-ethylene diamine complex was found to be complete at a pH of 3.5, for which no suitable indicator is available. Therefore, it is necessary to standardize these solutions by an electrometric titration as follows:

Ten cubic centimeters of the filtered cupri-ethylene diamine are diluted with approximately 500 cc. of distilled water and titrated with 1*N* sulphuric acid.

[4] Ethylene diamine obtained from the Carbide and Carbon Chemicals Corp. is sufficiently pure for this purpose.

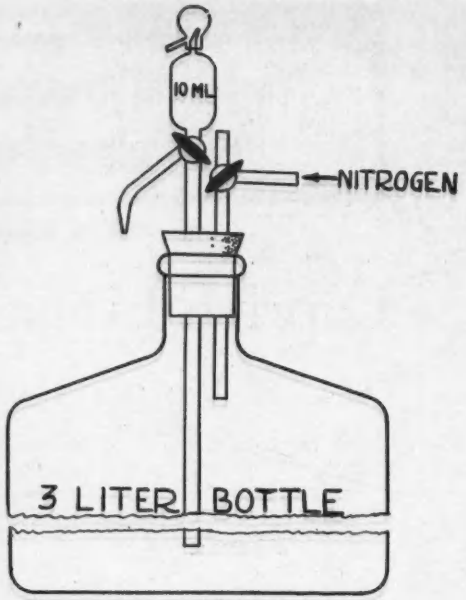

Fig. 1
Storage Container for Cupri-Ethylene Diamine Solutions

Two well-marked inflexion points occur in the neutralization curve. Typical curves are shown in Figs. 2 and 3.

The reaction taking place can be represented by the following equations:

(1) *Solution saturated with cupric hydroxide.*

$$CuEn_2(OH)_2 + H_2SO_4 \rightarrow CuEn_2SO_4 + 2H_2O \text{ (1st inflexion point)}$$
$$CuEn_2SO_4 + 2H_2SO_4 \rightarrow CuSO_4 + 2EnH_2SO_4 \text{ (2nd inflexion point)}$$

(2) *Solutions containing an excess of ethylene diamine.*

$$CuEn_2(OH)_2 + XEn + H_2SO_4 \rightarrow CuEn_2SO_4 + 2H_2O + XEn \text{ (1st inflexion point)}$$
$$CuEn_2SO_4 + XEn + (X+2)\,H_2SO_4 \rightarrow CuSO_4 + (X+2)EnH_2SO_4 \text{ (2nd inflexion point)}$$

All the results obtained by electrometric titrations of the cupri-ethylene diamine solutions indicate, definitely, that the molar ratio of ethylene diamine to copper, in solutions saturated with cupric hydroxide, is 2:1, which is in agreement with the observations of Traube.

The quantity of acid required to reach the first inflexion point is, therefore, not only a measure of the concentration of copper, but at the same time a

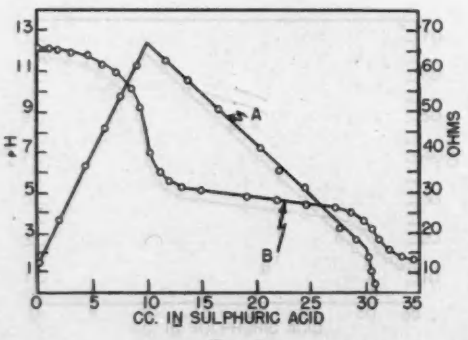

Fig. 2
Electrometric Titration Curves for Cupri-Ethylene Diamine Solutions Saturated with Cupric Hydroxide. A—Conductometric Curve. B—Potentiometric Curve.

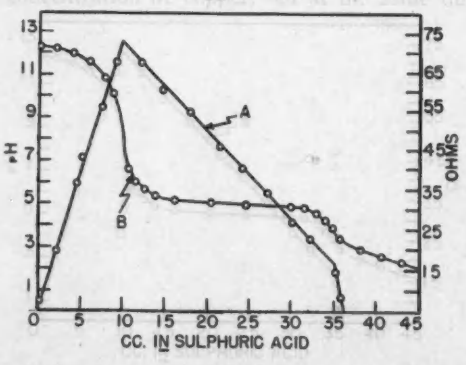

Fig. 3
Electrometric Titration Curves for Cupri-Ethylene Diamine Solutions Containing an Excess of Ethylene Diamine. A—Conductometric Curve. B—Potentiometric Curve.

measure of the concentration of the complex cupri-ethylene diamine present, provided the solutions are saturated with copper. Consequently, only the first inflexion point in the curve need be considered when determining the concentration of the complex.

Solutions of cupri-ethylene diamine, when prepared as described above, have a copper content of approximately 1.3*M*.

The Method

Cupri-ethylene diamine solutions, prepared according to the above, have to be diluted further with water before proceeding with the viscosity determination. A solution 0.5*M* in copper is a suitable solvent for all types of cellulose whose viscosity can be determined by the TAPPI Standard method. Its solvent power is approximately equivalent to that of the TAPPI cuprammonium solution; however, it is much more stable in the presence of atmospheric oxygen. Solutions of cellulose, in this solvent, will show no measurable change in viscosity up to a period of air contact of three to four hours; after this time a gradual lowering of the viscosity can be observed. If kept out of contact with air, no change in the viscosity can be noted after 72 hours. Therefore, a dissolving period of 30 minutes, and stirring in an open tube, as is later recommended, can be used without any danger of decomposition. Thirty minutes are sufficient to obtain 1% solutions of cellulose whose viscosity is less than 500 centipoises as determined by the TAPPI Standard method. When cellulose of higher viscosity has to be tested, a one-hour dissolving period is recommended. Cupri-ethylene diamine solutions of higher copper content have a greater solvent power. Solutions 1*M* in copper will dissolve the high viscosity celluloses in 30 minutes. They are, however, somewhat less stable in the presence of air. It seems preferable, therefore, to use, in this case, solutions 0.5*M* in copper with an increased dissolving period.

The use of shredded cellulose samples is preferred to unshredded samples. Shredding the cellulose previous to its dissolution was found to have no influence on the viscosity if the grinder did not run abnormally hot. Finely divided samples, of course, dissolve very easily; however, no difficulty was experienced in dissolving unshredded samples in the 30-minute period.

Measurements of cellulose viscosity were all made at 25 deg. C. This temperature is much more convenient, for year around use for mills located in the southern part of the country, than that of 20 deg. C. adopted by TAPPI for the cuprammonium standard method.

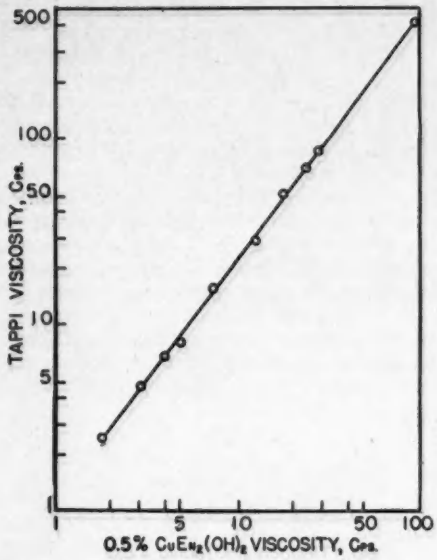

FIG. 4

Relation Between Cupri-Ethylene Diamine and TAPPI Cuprammonium Viscosity

The solubility of cellulose in cupri-ethylene diamine is slightly increased with decreasing temperature.

In detail, the procedure used is as follows:

A sample of shredded air-dry pulp, equivalent to 50 mg. of moisture-free pulp, is weighed into a dissolving tube as described by Russell and Woodberry *(16)*. Ten cubic centimeters of the cupri-ethylene diamine solution are then introduced by means of the calibrated automatic pipet shown in Fig. 1. The mixture is stirred for a period of 30 minutes and finally drawn into the viscometer, as described in the publication of Cannon and Fenske *(2)*. The stirrer is made of electrolytic copper. Several efflux times of the solution in the viscometer are measured with a split-second stopwatch, and the average time is used in computing the viscosity of the solution.

The viscometers employed were of the type described by Cannon and Fenske *(2)* in their Fig. 1.

The thermostat consisted of a 5-gallon cylindrical Pyrex jar, equipped with a complete "precision temperature regulator" furnished by the Eastern Engineering Company of New Haven, Connecticut. It controls the temperature within ± 0.05 deg. C. in the required range.

Results and Discussion

A series of experimental results are summarized

TABLE I.—COMPARATIVE VALUES OF CUPRI-ETHYLENE DIAMINE AND CUPRAMMONIUM VISCOSITIES.

Type of Cellulose	0.5% Solution in $CuEn_2(OH)_2$ @ 25° C.*	1.0% Solution in $CuEn_2(OH)_2$ @ 25° C.*	TAPPI @ 20° C.*	TAPPI @ 25° C.*	TAPPI — Sp. Visc. @ 25° C.**	$CuEn_2(OH)_2$ — Sp. Visc. 1% Sol. @ 25° C.**
Unmodified Cotton [a]	99.71-98.60	2360. -2230.	468.0 -350.0	426.9 -314.7	338.0	2129.
Modified Cotton [b]	22.70-22.30	183.4 - 176.2	70.00- 63.90	65.61- 56.00	50.30	164.4
Purified Ramie Fiber [c]	24.30-24.00	220.0 - 214.0	76.70- 73.40	70.36- 65.11	55.30	197.0
Purified Wood Pulp [d]	11.60-11.57	60.60- 60.00	30.70- 29.61	28.17- 27.00	21.40	53.6
Purified Wood Pulp [e]	12.70-12.37	66.50- 65.91	30.32- 29.00	28.00- 27.03	23.60	58.9
Purified Minnesota Flax [b]	26.00-25.41	230.5 - 222.5	87.30- 84.90	77.83- 75.11	60.80	207.0
Purified Minnesota Flax [b]	5.29- 5.27	16.72- 16.00	14.10- 12.90	10.00- 8.60	7.14	14.10
Purified Minnesota Flax [c]	3.14- 3.10	4.44- 4.40	5.71- 5.22	5.20- 4.91	3.17	3.00
Purified Minnesota Flax [c]	30.97-30.21	281.0 - 273.1	107.6 -100.0	95.33- 86.11	75.00	252.0
Purified Minnesota Flax [c]	4.78- 4.73	13.90- 13.76	9.88- 9.13	8.87- 8.00	6.22	11.50
Purified California Flax [c]	8.73- 8.69	35.70- 35.00	21.50- 20.01	19.31- 19.00	14.50	31.40
Purified California Flax [c]	4.01- 3.97	7.82- 7.69	7.91- 7.48	7.08- 6.83	4.76	6.04

* Average upper and lower limits 10-20 determinations on same sample (in centipoises)
** Average values
[a] Degreased native cotton
[b] Sample furnished by Crane and Company, Dalton, Massachusetts
[c] Sample prepared in Ecusta Laboratory
[d] Sample furnished by Richaven Investment Company, Tacoma, Washington
[e] Sample furnished by Rayonier, Inc., Fernandina, Florida.

in Table I and Fig. 4. It may be noted that the source and degree of modification of the various types of cellulose studied are quite different. The agreement of duplicate samples is much better than that obtainable by the standard cuprammonium method (see Table I). Experience has shown that if the given directions are rigorously adhered to, results can be reproduced that differ by a maximum of 1%. One worker equipped with two viscometers and one stirring device can run an average of 15 viscosity determinations in a normal 8-hour day. This includes weighing of the samples, dissolution, and the actual viscosity measurement. Comparing this result with those obtained by the standard cuprammonium methods, a considerable time saving is effected without sacrificing the degree of accuracy that can be obtained when using modifications of the cuprammonium method giving the most exact results.

The viscosity of a $0.5M$ cupri-ethylene diamine solution is 1.11 centipoises as compared to 1.23 of the standard cuprammonium solution (TAPPI), both measured at 25 deg. C.

If the specific viscosity measured in the two solvents is compared, the one measured in cupri-ethylene diamine is considerably higher. For this reason, a greater precision of measurement can be obtained with this solvent because the efflux times of the two solutions, in the same viscometer, differ in repeated runs on the *same* solution by about the same number of seconds. Checks on duplicate runs on the same sample show a slightly greater variation when cuprammonium solutions are used. This is due, in the main, to the inherent chemical nature of this solvent.

The equation of Farrow and Neale *(9)*,

$$1 + A/M = B/\log \eta r$$

where M = concentration of cellulose in grams per 10 cc. of solvent

A and B = empirical constants

ηr = relative viscosity of the solution,

was found to be most convenient for calculating viscosity at different concentrations. The same equation allows one to correct the concentration of cellulose solutions, and to refer viscosity values to a standard concentration.

If viscosities, which have been measured in cupri-ethylene diamine solutions of different copper content, have to be compared, a plot similar to that given in Fig. 4 can be successfully used.

The influence of an excess of ethylene diamine on the solubility of cellulose is surprising. Even small amounts of the amine, exceeding the 2:1 molar ratio of copper to amine in saturated solutions, result in a very marked decrease in the solubility of cellulose. If the molar ratio of amine to copper is increased from 2 to 2.25, the solution completely loses its solvent power, and the total of the dissolved cellulose is precipitated. Cuprammonium solutions seem to show just the reverse effect—i.e., at constant copper content, increasing the concentration of ammonia results in increased solvent power. The disregard of these conditions may have been the reason why cupri-ethylene diamine solutions have not been properly evaluated in the past as solvents for cellulose. Furthermore, these facts may become important in deducing the formulation of the copper-amine-cellulose complex structure, which, at present, is not thoroughly understood.

The use of other organic amines, in the presence of cupric hydroxide, has been given preliminary consideration as possible cellulose solvents for viscosity determinations. The 1, 2 diamines seem to show the greatest promise of utilization in this respect, and higher 1, 2 diamines, saturated with cupric hydroxide, seem to have even greater solvent powers than the ethylene diamine solutions. For example, an aqueous solution of propylene diamine, saturated with cupric hydroxide, and $0.5M$ in copper, apparently had twice the solvent power of an ethylene diamine solution of equal copper content. An investigation of various cupri-amine solutions and their action on cellulose is now being undertaken, and will be reported in a later communication.

Conclusion

Modified and unmodified cellulose was found to dissolve readily in cupri-ethylene diamine solutions $0.5M$ in copper. In solutions saturated with cupric hydroxide, the molar ratio of amine to copper is exactly 2, independent of the concentration of the complex. A simple method is described for the preparation and standardization of such solutions. The solvent power of cupri-ethylene diamine solutions is extremely sensitive to the molar ratio of amine to copper. The solvent, as well as its cellulose solutions, is relatively stable in the presence of air.

The cupri-ethylene diamine method for the determination of the disperse viscosity of cellulose is simpler, more rapidly carried out, and shows a higher degree of reproducibility than the standard cuprammonium methods.

Acknowledgment

The authors wish to express their thanks to C. O. Hall, C. L. Dickson, and Miss S. K. Philhower, of the Ecusta Paper Corporation, Research Department, for their assistance in obtaining the experimental data. The authors are also indebted to E. O. Reed of Crane & Company, Dalton, Massachusetts, and to E. D. Rich of the Richaven Investment Company, Tacoma, Washington, for furnishing a number of standard viscosity pulp samples.

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F. H. Lindus Transferred to Canton

The Timken Roller Bearing Company announces the transfer of F. H. Lindus to sales promotion work located at Canton, Ohio. He will contact users of bearings regarding mutual sales and merchandising problems.

A graduate of the University of California, he has been with the Timken company since 1935, serving as Los Angeles branch manager of the Service Division until he was transferred to the main office at Canton a few months ago.

The Function of a Yankee Drier on a Paper Machine*

By Kurt Wandel[1]

Abstract

The Yankee drier is a large paper machine drier having a true and polished finish and involving a principle of application differing from ordinary driers inasmuch as the sheet of paper is pressed onto its heated surface while still in a wet and plastic state by means of a pressure roll. The pressing operation accounts for removal of additional free water where the sheet is immediately put onto the drier. The pressing improves the finish of the sheet as well as the structure and strength. The greatest advantage of the Yankee drier lies in an increased drying capacity per square foot of drying surface, from three to five times as great as on ordinary driers due to close contact and improved heat transfer. Machines are described with two Yankee driers for most efficient results and for an even finish on both sides. Combination Yankee machines use a reduced number of regular driers for preheating and for finishing of drying operations after the sheet has passed over one or more Yankee driers on papers ranging from lightweights to paperboard.

The Yankee drier and its method of application is sometimes credited to have been invented in 1827. Special paper machines featuring its use were developed in Germany. A patent was granted covering a Yankee machine in Germany in 1880. This patent was subsequently protested and cancelled in 1891. Such machines were first introduced into this country in 1891 by Oscar Thilmany, the founder of the Thilmany Pulp & Paper Co., Kaukauna, Wisconsin. The machines became known as "Flying Dutchmen" indicating their origin and suggesting their productive capacity. During the world war, the name was changed to "Yankee Machines" and "Yankee Drier" which name has been retained since. All early machines of this type were operated with a single drier and used the pick-up felt principle in which the felt picked up the sheet from the couch roll and delivered it direct to the drier with or without a press in between. The early Yankee machines made mostly tissue and other lightweight papers. While there has been some progress in the extent of the use of the Yankee machine in this country, its use here cannot compare to the widespread use of this type of machine in European papermaking countries where its use ranges from the manufacture of cigarette paper to paperboard.

There are six basic advantages to be gained from the use of a Yankee drier involving the method of the pressing on a wet web of paper to the surface of the drier: (a) additional removal of water through pressing; (b) increased drying capacity per square foot of drier surface; (c) improved finish; (d) improved structure and strength; (e) automatic handling of lightweight or weak sheets while still wet at high speeds; and (f) sufficient adhesion to the drier surface for creping.

The Yankee drier and its principle of handling the sheet can be incorporated into any paper machine to manufacture almost any grade of paper. The benefits of such use have unquestionably been underestimated in the past.

Function of Regular Yankee Machine

The ordinary type of Yankee paper machine forms the basis for further development and use of the principles involved on a broader scale in connection with other paper machines and for a greater variety of paper (Fig. 1). The Yankee drier and rubber-covered pressure roll form a second press. This press is important. Its beneficial functions should be fully understood so that full advantage of them may be obtained in more extended use. The press differs from ordinary presses because the Yankee drier, acting as an upper press roll, is heated and has a finished and polished surface to which the sheet will adhere securely in contrast to an ordinary upper press roll from which the sheet is taken off and which therefore cannot be heated. The sheet as it contacts the surface of the drier is instantly heated up and gives up its free water content much more readily. The heating of the sheet makes the fibers more pliable and permits them to be pressed closer together. With stronger fibers there is less hydrating required and the sheet will assume a more uniform strength in both directions. With weaker fibers, such as with a percentage of deinked or reused stock, greater strength can be obtained than would otherwise be possible. The sheet being pressed tightly against the polished surface of the drier assumes a smooth and compact finish. All this is done without unduly compacting the web and without loss of thickness as compared to calendering action.

Maximum pressure can and should be applied in the drier press to obtain maximum removal of water, best finish, and close contact of the web with the drier. On lightweight paper and tissue the moisture content of the web may vary from 72 to 76% on entering the Yankee press. This percentage can be

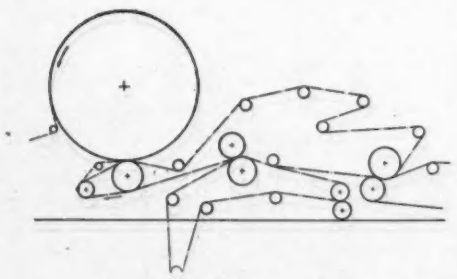

FIG. 1
Regular Yankee Machine

*To be presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 16-19, 1942.

[1] Member TAPPI; Consulting Engineer, Coatesville, Pa.

decreased from 6 to 8% after passing through the press and have from 64 to 70% moisture which amounts to removing over 20% of the water in the sheet. There have been claims of a moisture content of as low as 60% after pressing on heavier grades of paper and with the web entering at a higher percentage of dryness. The water is absorbed and carried off by the pick-up felt although in some cases free water is discharged.

While many Yankee machines operate with a pressure of 200 pounds per linear inch, the pressure has been raised on some machines to 350 pounds and attempts made at still higher pressures. The limitations in this respect lie in the endurance of the rubber covering and the strength of the Yankee drier shell. The rubber covering suffers mostly due to excessive crown which has a tendency to crowd the rubber sideways and necessitates frequent regrinding. The crown on Yankee pressure rolls varies from 0.050 to 0.120 inch which is high. In one mill the pressure rolls are made of steel and their crown ranges from 0.065 to 0.085 inch on 9 Yankee driers, although their calculated deflection is much less for pressure and width of roll.

An explanation has been sought for the necessity of the abnormal crown. Careful investigation has shown that the trouble is due to a difference of expansion between shell and drier heads of the Yankee drier. There is a difference of temperature of the shell in the area covered by the paper and the ends of the drier. In the center section, this temperature is between 190 to 200 deg. F. due to heat given up to the web; while on the ends of the drier, the temperature corresponds to the steam pressure used less a slight loss due to radiation. By calculation it has been established that the difference of expansion between the center of the shell and the ends less the expansion of the drier shell due to 30 p.s.i. steam pressure causes the face of an ordinary 12-foot diameter Yankee drier to be concave to the extent of 0.025 inch. This alone requires 0.050 inch crown in the pressure roll.

This condition has been overcome in an improved construction of Yankee drier designed particularly to keep a level surface under operating conditions involving heavy pressure from a pressure roll. In this drier roll the steam is confined to an annular space between outer shell and an inner shell. The

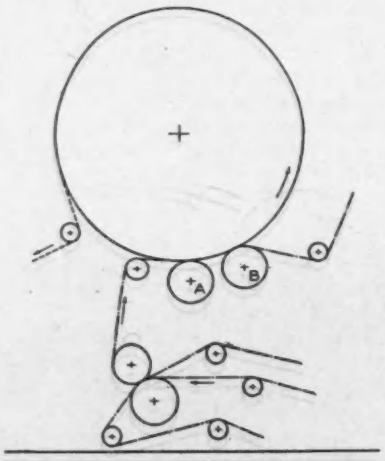

FIG. 2
Dual Pressure Rolls

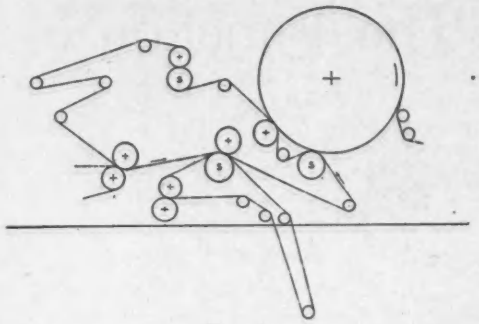

FIG. 3
Yankee Machine with Suction Pressure Roll

solid ends of the drier are replaced by pipe spokes connected to the inner shell so that their greater expansion may not distort the outer shell. The outer shell is constructed of steel which is two and one-half times as rigid as cast iron per inch thickness. These driers may be operated with pressures of 500 pounds per linear inch with normal-pressure roll crowns. With such pressures between the Yankee drier and pressure roll, highly efficient results may be obtained in the removal of water and on the finish of the paper, particularly on heavier grades.

Arrangement of Pressure Rolls

A popular arrangement of presses on the Yankee drier used widely in European mills has two pressure rolls mounted side by side as shown in Fig. 2. The pick-up felt passes through both nips. A significant result of this arrangement is that while pressure roll *A* may not show any discharge of water at any time, pressure roll *B* will readily discharge free water on certain papers and speeds. This occurs, of course, due entirely to the heating up of the sheet and the felt in the space between the two pressure rolls as there is ordinarily no diffierence in pressure between the two rolls.

Suction Pressure Rolls

Remarkable results have been obtained with particularly strong, rubber-covered suction rolls mounted in a similar position as the regular pressure roll, shown in Fig. 3. The advantage of the suction roll is particularly for high-speed operation and for the elimination of *blowing* — getting air between the sheet and the felt. Figure 3 shows a second plain pressure roll which completes the job of pressing the sheet uniformly against the drier surface. In this arrangement the felt is taken away from the drier so that a different section of the felt may now be pressing against the sheet to make up for any slight spot on the felt or the sheet. This helps perfect surfacing but slows production slightly.

The Yankee Drier

The Yankee drier was imported for many years after the Yankee machine and its principle had been adopted in this country. To carry out one of the most important functions of the Yankee machine, to do all the drying on one drier, this drier had of necessity to be of large diameter. This involved special castings of large size having a fine grain structure for the highly finished surface required. In addition special grinding machines had to be built. However, the technique of making these driers was

soon acquired and Yankee driers have been made in this country now for some time equalling and excelling the European manufacture. The diameter of the Yankee driers here are limited to 12 feet on account of transportation. In Europe, Yankee driers have been made and delivered to the paper mill by water 5100 mm. in diameter which is equal to about 17 feet.

On the regular type Yankee machines the drier is responsible for two outstanding results. One has been mentioned — the surfacing of the paper by being pressed against the highly finished and heated surface of the drier. The other effect, which is the more important for application on regular paper machines, lies in the increased drying capacity per square feet of drier surface.

For the principle and drying figures we shall consider the ordinary type of Yankee machines having just one drier and making as a rule lightweight papers. The most efficient operation as to tonnage occurs at about 17 pounds (24 x 36 basis) paper with a single Yankee drier of 12 feet in diameter. Drying rates on these machines are from 3 to 5 pounds per square foot of drier surface per hour and are from three to five times as high as on regular paper machine driers on corresponding papers. A Yankee machine having a 12-foot diameter drier will equal in drying capacity a regular drier section of from 10 to 12 4-foot diameter driers. Machine speeds vary from 250 to 500 f.p.m. The papers produced on these machines are wrapping, bag, waxing, manifold, creping stock, twisting, pattern, slip sheet, envelope and many others. Advantages of these machines lie in their low first cost, small space required and ease of operation. A disadvantage lies in the fact that these machines are in their construction limited to lighter weight papers and having a finish on one side only. As these "regular" Yankee machines use one drier only and are limited thereby, their production has suffered as compared to regular paper machines the speed of which has increased steadily through improvements in formation at high speed, water removal, and in being able to add to their drying capacity at will.

Drying on Yankee Driers

The TAPPI Paper Drying Code (TAPPI Standard E 200 p) defines paper drying correctly as follows: *The operation of drying paper is essentially one of supplying heat units to evaporate most of the water contained by the sheet after leaving the press.* The greatest obstacle to the continuous supply of heat units necessary for absorption by the sheet in the process of evaporating its water content is the air film between sheet and drier surface on regular paper machine driers. This air film is completely eliminated between the sheet and the true surface of the Yankee drier thus affording a free passage of the heat units. Basically, this condition accounts for drying rates on Yankee driers exceeding those on regular paper machine driers to the extent of 3 to 5 times.

There are other conditions, however, on Yankee driers which must be fully understood in order to take advantage of their increased drying capacity. As on ordinary paper machine drier sections, the "free water" in the paper will leave the sheet very much more readily through evaporation than such water as may be held within the fibers or residual moisture which is driven out only slowly. On a Yankee drier, the close contact of the sheet and the presence of water as a heat conducting element will drive out an initial amount of water to the exact extent to which heat units can be supplied. Initially, the flow of heat units through the shell cannot match the absorption of these units by the sheet. Such is never the case on ordinary driers on which the resistance of the air film between sheet and drier face is always greater than the resistance to the flow of heat units through the shell. The transfer of heat units through ordinary drier shells at ordinary steam pressures ranges from 1000 to probably 6000 B.t.u. per sq. ft. per hr. with a theoretical transfer possible of approximately 27,000 B.t.u. through a 1-inch shell at 30 p.s.i. steam pressure. On a Yankee drier with a 1.5-inch thick shell, therefore, 18,000 B.t.u. per sq. ft. per hr. may be transferred. All these heat units can be absorbed by the wet paper and will evaporate approximately 18 pounds of water. With a slightly higher steam pressure or the help of hot air on the outside of the sheet, 20 pounds of water may be forced out of the paper or board per square foot of effective drier surface. This rate of evaporation has actually been reached on a Yankee drier put into operation in 1941. Such rates of transfer of heat units are only possible through thinner drier shells than have been used in the past on Yankee driers. The average cast iron shell has a thickness of from 2.5 to 3 inches which is required under the "Unfired Pressure Vessel Code" with a limitation of steam pressure according to laws in various states. According to Fourier's law, the transfer of heat units through any material is inversely proportional to the mass of the material. Accordingly, a 1.5-inch thick drier shell can transmit twice the heat units of a shell 3 inches thick in the same period of time. As the paper on the Yankee shell can absorb the heat units as fast as they may be given, it follows that the 1.5-inch shell can dry twice as much paper in a given time. It must be stated here that the above calculations are figured on heat units transferred at temperatures of around 200 deg. F. and not much above. Were the temperatures of the drier shell to go above 212 deg. F. steam would be forming between sheet and drier and actually separate the sheet from the drier.

Vapor Absorption

Another point of difference between drying on a Yankee drier as compared to drying in a regular drying section lies in the ease and efficiency with which hot air may be applied and the vapor be absorbed and removed. The sheet is completely exposed to the surrounding air, there being no drier felts around the sheet and drier ordinarily. This allows the drier to be surrounded with ducts supplying hot air with force over every square foot of the surface of the sheet. Such ducts are shown in Fig. 6. This flow of air, which incidentally should be hotter than applied on ordinary drier sections, assists evaporation from the side of the sheet from which it is most difficult to remove moisture. All vapor is swept away from the surface of the sheet. Its natural tendency to rise is taken advantage of by having a hood located some distance over the Yankee drier or, where efficiency is demanded in preference to capacity, the vapor laden air should be sucked away from individual compartments surrounding the drier. Changes in the vapor absorption system and particularly removal

of inefficient hoods over Yankee driers have made a difference in production of as high as 33%. Yankee driers in any instance should not be operated without application of hot air. The proper application of hot air will carry its share of the drying capacity of any Yankee drier to the extent of from 15 to 25%.

Yankee driers are used in the making of cigarette, condenser, and other delicate papers. A pick-up felt of the finest structure delivers the sheet from the couch roll direct to the face of the Yankee. For such papers, however, a fine wool drier felt is used around the drier to control even and slow evaporation of moisture all of which is absorbed by the felt. The felt in turn goes around another large diameter drier for drying.

The highly efficient drying period extends on a Yankee drier only to about 40% of its effective periphery starting from the pressure roll. After that, the paper side next to the drier has lost considerable of its moisture content and can not any longer transmit heat to the other side effectively. It will actually become and act as an insulator thus slowing down the balance of the drying. This has kept the single Yankee drier machine from being used more widely on heavier papers. On absorben: type of papers such as toilet, the open structure of the sheet will allow all moisture to be driven out from one side without much resistance although on such papers as well there are the two distinct areas of drying capacity.

Double Yankee Machine

The obvious thing to do, to take full advantage of the drying capacity of a Yankee drier, is to take the sheet away from the drier after its initial and efficient drying cycle and put it in reverse onto another Yankee drier, the same as it was put on the first drier with a pressure roll. Thus we have the moist side of the sheet next to the heated surface against which the drying may be finished efficiently and assume the same finish as the side initially dried. This process is shown in Fig. 4. The machine is called a double Yankee machine. One of these machines is operating in Canada and one in this country. The Canadian machine has made papers up to 80-pound basis while the American machine operates on lighter weights but at much higher speeds.

It has been found that the most efficient method of drying with the double Yankee is to take the sheet from the first drier from 70 to 80% dry and then finish the drying on the second drier. This method, however, may not allow the finish on both sides of the paper to be exactly alike. For absolutely even finish, the sheet will have to be taken off the first

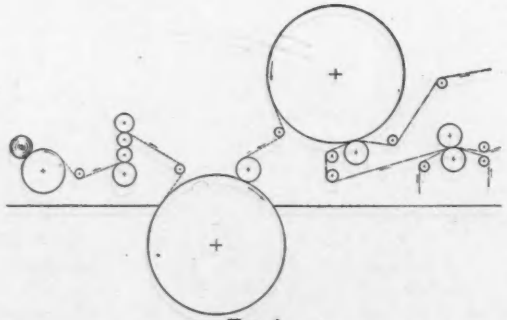

FIG. 4
Double Yankee Machine

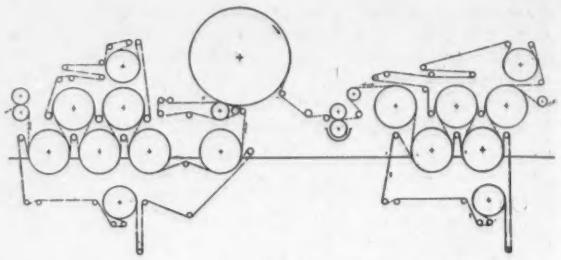

FIG. 5
Combination Yankee Machine Drier Section

drier with a greater moisture content. This can be regulated through the steam pressure in the two driers.

Modified Yankee Machine

According to good drying practice on regular paper drier sections, the sheet is brought over a few driers with graduated temperatures to bring it up slowly to the temperature required for evaporation. The same should be done on Yankee machines if operated on heavier grades of paper. On lightweight papers, the pressing against the Yankee drier will heat the sheet almost instantly and start evaporation. On heavier grades as well as on papers of denser structure, steam would form between sheet and drier resulting in cockles and uneven drying otherwise.

On the modified type of Yankee machine as shown in Fig. 5 as many driers as may be required according to speed of machine and grades of paper made are mounted ahead of the Yankee drier. The sheet is brought up to a temperature of about 190 deg. F. It is then pressed against the Yankee drier with a pressure roll. A felt may be used on lighter weight papers while on paper board, for instance, no felt is required between pressure roll and drier. The Yankee drier is left the job of evaporating the bulk of the water in the sheet according to the capacity figures given. The sheet is taken off before it is entirely dry, it is sized if so required and is then carried over a few more regular driers to be finished. There are a few of these modified Yankee machines in operation. Some were rebuilt for a specific purpose and a few constructed new. On the machine as shown, there are 11 5-foot driers, 2 4-foot felt driers, and 1 12-foot Yankee drier. The machine is operating at speeds between 700 to 800 f.p.m. mostly on waxing papers from 18- to 35-pound basis. The machine has an average drying rate of about 2 lb. per sq. ft. per hr. The average drying rate for similar papers would probably be 1.2 pounds. It may be seen from this that the 12-foot drier in comparison does the work of 11 5-foot diameter driers or, in proportion to its diameter, four and one half times as much. In addition, the surface of the wire side of the sheet which runs against the Yankee drier comes out compact with a desirable finish. This side of the paper is printed for wrappers and is thereafter waxed with the result that it absorbs much less ink and paraffine than a regular Fourdrinier sheet and in addition, the printing will appear in better relief such as is demanded for this class of paper.

On paperboard, bristols, card index, tag stock and many similar grades, one or two Yankee driers built in the drier section, as shown on Fig. 6, will not only increase drying capacity but will close up either one

or both sides of the sheet under the heat and pressure to which they are subjected, with the result that a finish is obtained without loss of caliper and with full retention of the flexibility and bending qualities of the stock. Such Yankee driers are in operation in many European mills making the finest grades of board and heavy specialties. In this country, we have only smoothing rolls and calenders which are doing overtime work. On the paperboards now made in the south, a better finish would be of greatest help for printing on containers. Many mills remoisten the board after the first calender stack for better finish on the second stack. The fibers in the board are then set and finish can only be obtained with loss of caliper. The result with one or two Yankee driers on these machines would give the machines increased drying capacity and a smoothing down of the sheet under heat and pressure while the board is still in plastic condition.

Coating

Figure 7 shows an arrangement for sizing or coating paper or board in connection with a Yankee drier. Any suitable emulsion containing colloids, coloring, sizing, or other filler compounds are applied by the Roll A and impressed on the surface of the sheet by the pressure roll and subsequently dried around the Yankee drier. The drier in such a position may be chromium plated for the highest finish.

Creping

The natural affinity of a wet sheet of paper for a heated and polished metal surface is utilized for creping on a Yankee drier. Most toilet paper, all paper towelling, napkin paper, facial tissue, and cellulose wadding are creped on the paper machine. These papers used to be creped in their wet state either on the last press or on a creping drum ahead of all drying. The drying process was highly inefficient on account of the lack of good contact of the creped paper with the driers. The modern method is to apply the wet sheet to a Yankee drier and dry the sheet as far as possible around the drier and then crepe it off the drier face with a creping doctor applied to the drier face. Facial tissue and cellulose wadding are completely dried before being creped off. This accounts partly for the softness of the sheet, the structure of which is broken up in the process of creping. The fact that paper machines on wadding are operated at 2000 f.p.m. and on facial tissue,

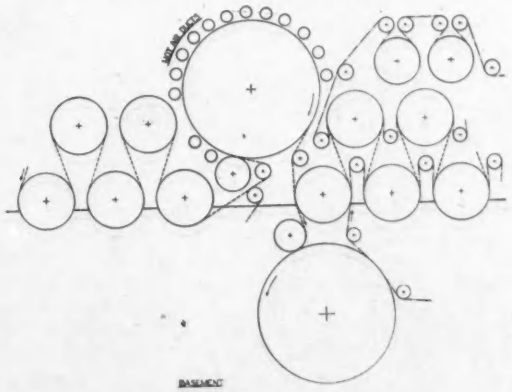

FIG. 6
Built-In Yankee Drier

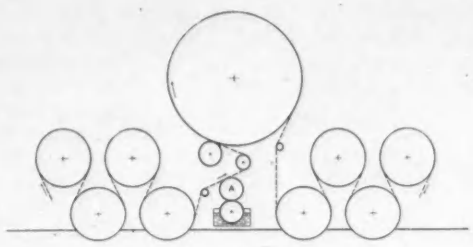

FIG. 7
Coating with Yankee Drier

which is run over the machine before creping on a 7-pound basis, at 1400 f.p.m. both on a single Yankee drier proves the possibilities of the Yankee principle. Toilet, napkin and towelling are not completely dried before being creped off as these papers must retain a certain amount of rigidity. The paper is taken off instead at between 70 to 80% dry after which the completion of the drying can be accomplished with a few regular driers or preferably a second Yankee drier. According to evaporation figures given before, a single 12-foot diameter drier of modern construction will be able to dry 13-pound toilet tissues up to 80% dry at 1400 f.p.m. with only one second Yankee drier to do the rest of the drying. These figures may astound some of the mills still operating regular drying sections, nevertheless the figures are based on drying rates of a Yankee machine now in operation.

The demand for creped papers of heavier weights has increased steadily, particularly for wrapping purposes. Such paper is used for tire wrapping and other circular wrapping purposes. These papers require little stretch. In contrast there are creped papers used for barrel and bag liners, bale wraps, etc. with a large amount of stretch. The latter papers were in great demand during the last war as well as bandaging papers also with very great stretch. There is an unfilled demand for stretchable wrapping papers of all weights for the packaging of irregular shapes. The papers with the long stretch are now all creped in a separate operation adding to their cost which limits their use. All these papers may be made on a Yankee drier as part of the paper machine operation with no loss of production, being creped off the Yankee drier in the same manner as the lighter weight papers. It is true that there is certain technique required for the creping process but such information is available today.

Two-Sided Papers

Papers as newsprint, book, and other flat printing papers may be made on modified Yankee machines. The advantage of such machines would lie in their simplicity and ease of high-speed operation on the one hand and with a definite improvement of product as far as printing surface is concerned on the other. One of the obstacles in the past has been the engineering problem of constructing Yankee driers in suitable widths and diameter with shells strong enough to withstand steam pressure, the action of the pressure rolls and centrifugal forces without too heavy a shell. The construction of these driers in welded steel has overcome these objections. Yankee driers can now be made in any size and of any strength required. Plans have been made for the construction of machines for newsprint with Yankee driers of which

there would be four to five required for each machine. The problems involved could best be worked out in revamping machines with old drier sections into which two Yankee driers would be worked in.

Conditions for Yankee Driers

Yankee driers may work well under any ordinary conditions suitable for papermaking. The use of soft water will help a great deal to retain the finish on the drier without undue doctoring. Sizing of the paper has to be done carefully, the size must be precipitated well. A furnish containing old papers always works well on account of the absence of free pitch and the presence of small filler fibers. Other considerations must be left to the papermaker more than to the machine builder.

Conclusion

The advantages of the Yankee drier should be considered from two angles. First, from the standpoint of the modern Yankee machine with all its possibilities of speed and quality. Second, from the standpoint of the present situation in the paper industry. Under present day war conditions, the question of new machines and the development for the further application of the Yankee machine is secondary. Of primary importance, on the other hand, is the assistance which the Yankee principle may give to increase production. Looking at the many paper machines in this country which have arrived at the point of obsolescence mainly from the standpoint of production, the Yankee drier can be of help to increase pressing and drying capacity or assist in making more suitable paper with a small investment and little trouble in installation. A Yankee drier will allow the making of heavier papers which the regular drier sections cannot take care of or it will permit the making of lightweight or very delicate papers with the additional change to a pick-up felt. There is less stock preparation necessary on Yankee-type papers due to better structure through pressing under heat. The Yankee drier will better handle a sheet of paper with shorter fiber such as groundwood, waste paper, and deinked stock. The pressing of the sheet against the drier will produce greater strength in such papers. In Europe, under war-time restrictions on pulp, Yankee driers perform their duty in making very acceptable wrapping papers made entirely from old papers.

Operating Control of Pulp Bleaching*

By John D. Rue[1]

The Secretary of the Technical Association recently mailed to the members of the Technical Association of the Pulp and Paper Industry a questionnaire, prepared by the Pulp Purification Committee, dealing with methods of testing for oxidizable material in pulps which can be used for operating control in pulp bleacheries. This work was done as part of the effort to cooperate with the subcommittee on Oxidizable Materials of the committee on Standards and Methods of Testing in the Division of Cellulose Chemistry of the American Chemical Society.

The questionnaire dealt with the subject in relation to: 1. Standardization of terms used in the application of chlorine and chlorine compounds. 2. Efficiency in the washing of pulps. 3. Digester control and grading of pulps. 4. Proportioning chlorine to pulp in pulp chlorination. 5. Proportioning hypochlorite to pulp in bleaching.

This report summarizes the major points of information found in the 78 replies together with such discussion as has seemed desirable to place the information in a proper perspective.

1. Standardization of Terms Used in the Application of Chlorine and Chlorine Compounds

Chlorine reacts in at least two distinctly different ways depending on the conditions under which it is applied. It may react as a chlorinating agent or it may act as an oxidizing agent. Also it is applied in various forms—e.g., the element itself or compounds such as bleaching powder, hypochlorites, and chlorites. The chlorine used to make the compounds may appear as such in the compound and represent the true chlorinating and oxidizing power of the compound, or it may be in part replaced in the compound by an equivalent proportion of oxygen. In all cases it is entirely correct to express the oxidizing power in terms of equivalent chlorine.

Bleaching powder, for many years, was the major source of chlorine available to the industry. It contained 33 to 38% available chlorine—i.e. available as a chlorinating or as an oxidizing agent. A powder of 35% available chlorine was accepted as standard and weights of other strengths were recalculated to weights of 35% available chlorine containing the equivalent amount of chlorine. It became common practice to refer to the concentration of solutions of bleaching powder in terms of their content of 35% bleaching powder.

Then bleaching powder was gradually replaced with liquid chlorine which was converted at the consumers' plant to bleaching solutions by chlorinating lime milk. Some people continued to express concentration in terms of content of 35% bleaching powder $Cl_2 \times 100 \div 35$; others in terms of content of chlorine. In view of the fact that a small amount of the chlorine became inactive in the processes of making or storing the liquor the more accurate term "active" or "available" chlorine began to be used.

Then came the practice of adding elemental chlorine to the pulp. It became desirable to use some term to express the quantity of chlorine (or of its equivalent oxygen) that was added to the pulp or consumed by the pulp when either chlorine, bleaching powder, hypochlorite, or chlorite were applied. A properly chosen term could be used in all those cases but in practice there are several terms still in use to express the same value. Out of the 78 replies to the questionnaire 46 report the use of the term "available chlo-

* Presented at the Fall Meeting of the Technical Association of the Pulp and Paper Industry, Ann Arbor, Mich., Sept. 16-19, 1941.
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rine." It is interesting to note, however, that 7 limit the term to an expression of the concentration of solutions and use some other term for expressing the chlorine demand of pulps. In one case the term is used alternately with "percent bleaching powder."

There were 17 other replies which indicated chlorine as the basic word in the term used—e.g., "active chlorine" or "percent active chlorine." These are not used as extensively but are almost as satisfactory as is "available chlorine."

"Available chlorine as chlorine." The last two words appear to be superfluous.

"Chlorine number." This would apply to the demand of pulps but could not be so appropriate for expressing the concentration of solutions.

"Chlorine" or "percent chlorine." These have the disadvantage that they do not differentiate between available and inactive chlorine.

There were several replies that indicated a practice that still clings to the early usage of the bleaching powder days. Among the terms used are:

Percent bleaching powder
35% bleach
Percent 35% bleach
Percent 35% bleaching powder
Available chlorine expressed as 35% bleach powder.

Bleaching powder is not a definite unit except that by definition it can be made to contain 35% available chlorine. In practice all quantities under consideration, even weights of bleaching powder, have to be recalculated if they are to be expressed in any one of those units. And after all they are obsolete units.

One reply reported the use of the term "TAPPI permanganate number."

"Percent bleachability" and "chlorine demand," reported in use by several, should be expressed in some clearly defined term if they are to have specific meaning. The desire for simplicity and accuracy suggests that a term be selected and standardized. In this our contributors to the questionnaire agree almost without a dissenting vote. Their recommendations supported by the reported extensive usage suggest "available chlorine" as the most satisfactory term. That term could apply equally well to elemental chlorine or to chlorine in the form of its solution in water or in the form of hypochlorous acid, of the hypochlorites, of the chlorites, etc. It is a term that can be used in expressing concentration of solution or the qualities required, added, or consumed in the chlorination or in the bleaching of pulp.

2. Efficiency in the Washing of Pulp

Quality specifications for bleached pulps are constantly becoming more exacting. To meet them the methods of operating control must become increasingly accurate. At every step in the processing, removal of soluble impurities by thorough washing of the pulp is a recognized essential; but no satisfactory method is yet available to indicate how thorough the washing has been. Some methods are based on the measurement of the removal of inorganic solids such as chlorides, soda salts, free alkali (pH), etc. Other methods are based on the attempt to measure by oxidation the extent of the removal of soluble organic matter.

Sixteen respondents consider the determination of chlorides or of soda a satisfactory indication of washing efficiency, while 36 consider those methods wholly or partially unsatisfactory or of doubtful value.

Fifty-three mills would be interested in a method for determining soluble organic matter as an indication of washing efficiency. Twelve consider the subject of sufficient importance to justify research. The iodate method seems to have been most prominently in their minds despite the short-comings of the method in its present state of development.

3. Digester Control and the Grading of Pulps

Quick methods for determining oxidizable material have, in some cases, been used to indicate the end of the digestion period. Even the subsequent grading of the pulp by such methods has some indirect value in digester control.

That the permanganate number is finding an important place in such operations is indicated by the replies to the questionnaire. For this purpose 46 report the use of the TAPPI Standard although, it should be noted 6 make some modification in the testing details. The three standard kinds of chemical wood pulps are well represented in the application of the method (11 soda, 37 sulphite and 22 sulphate pulps; also a special pulp).

Nineteen more mills use some type of permanganate method, 7 of them use the Bjorkman method or some modification of it. Five use a method which depends on the time required to exhaust the permanganate. Two go back to the original Wiles method which is the basis for the TAPPI Standard. The other 5 differ in various details such as the use of oxalic acid or chromate for back-titration, or as in the preparation of a fluffy sample by washing it in acetone.

One mill uses, as an alternate for the standard permanganate method, a series of hypochlorite bleaches for a fixed period in the presence of an excess of chemical.

Three others use a hypochlorite method of some type.

Four use the Roe-Genberg method and two some modification of it.

The replies to the questionnaire stress the difficulties encountered in an effort to obtain samples truly representative of the entire digester content. They recognize the variations which occur throughout the digester. The replies also indicate the importance in testing pulp freshly blown from the digester, of first screening out the knots, shives, and fiber bundles. If not removed they cause high test results. They stress, too, the importance of thoroughly washing the samples before the test is made.

The replies call attention to the fact that the fine particles in the pulp have an oxygen consuming power which differs from that of the coarser fractions of the pulp. Care must be exercised in dewatering and washing the test sample that "fines" are not lost through the filter medium.

Tests which are helpful as guides in the control of digesters are valuable also in grading pulps for purchase or for sale. Twenty-one mills report the use of tests for oxidizable material for grading purposes. Fifteen of these mills use the TAPPI Standard permanganate method, one the Bjorkman, and one a special permanganate method. Three use the Roe-Genberg method or some modification of it, and 3 some type of hypochlorite bleach. (In some cases two methods are used.)

4. Proportioning Chlorine to Pulp in Pulp Chlorination

In chlorinating pulp as one step in the procedure

for bleaching or purification, it is necessary under some conditions of operation to know how much chlorine should be added to a given quantity of pulp. That is important for the reason that the chlorine requirement varies from batch to batch, a fact which must be admitted regardless of whether the pulp is purchased or is pumped from the local pulp mill.

The obvious method of testing would be to chlorinate a small sample of the pulp and some methods are being developed along that line. However, only 9 mills reported the use of methods of that general type. Three of these mills use the Roe-Genberg and 5 some other type of chlorination test and all on sulphite. Only one reported the use of the TAPPI chlorine number test. One reported that the method had been tried and discarded.

Three use some form of hypochlorite test.

The most popular type of test is based on the use of permanganate. Out of 35 mills reporting the use of permanganate, 30 use the TAPPI Standard method, 1 the Bjorkman and 4 some other modification of which 2 measure the time to exhaust the permanganate.

Twelve mills agree that the proportion of $KMnO_4$, in relation to pulp should vary to some extent depending on the chlorine demand of the pulp. There is a difference of opinion, however, as to whether the changes in proportioning should be made by varying (a) concentration of $KMnO_4$, at constant volume of reaction mixture or (b) volume at constant concentration or (c) size of pulp sample at constant volume and constant concentration.

In any case there must be some means of converting the test results to figures which indicate the proportions of chlorine to be added commercially. Some of the replies indicate the use of a factor and some the use of a curve or rather a series of curves if more than one type of pulp is involved. About half of the replies indicate unqualified satisfaction with methods of testing which they use. Only 2 express definite dissatisfaction; one in the use of TAPPI standard permanganate for sulphite pulp and one in a special chlorination test for sulphite which is in process of being replaced by the TAPPI standard permanganate.

The others report satisfaction within limits. One points out that the Wiles method gives good results for softwood pulps but not for hardwoods. Others consider the TAPPI standard permanganate satisfactory provided there are no radical changes in wood or in the conditions of digestion. Several call attention to inaccuracies when the test results fall outside certain limited ranges of values.

5. Proportioning Hypochlorite to Pulp in Bleaching

Bleaching with a hypochlorite is essentially an oxidation reaction and it is logical to use an oxidation test as a guide to the control of such reactions. In general the replies indicate that mill practice is logical in that respect.

In all the replies except 2, the test reported as in use for the initial hypochlorite stage in the bleachery is the same as that used for either digester control or for the chlorination stage. One of the 2 uses a special hypochlorite test for all hypochlorite stages and the other a series of hypochlorite tests.

Three mills test only the unbleached sulphite pulp and from the result, by means of factors, determine the distribution of available chlorine between stages in the bleaching process.

Two mills vary the chemical in the first stage of the bleachery so as to deliver the pulp to the subsequent bleaching operations at a practically uniform bleachability. They find it, then, unnecessary to make tests for the other stages. One uses the TAPPI standard permanganate test for the first stage and the other uses a special chlorination test.

Some mills make no test for bleachability for the final hypochlorite stage of a multistage procedure but depend on the brightness of the pulp as a guide to the proportioning of bleach to pulp.

One mill uses the Roe number for the chlorination stage and the TAPPI standard permanganate for the subsequent hypochlorite stage.

Another mill uses the TAPPI standard permanganate for the chlorination stage and a series of hypochlorite tests for the subsequent stages.

Still another mill uses a series of hypochlorite tests for single-stage bleaching and a special hot hypochlorite test for the stages following chlorination and following caustic extraction.

Conclusion

By way of conclusion it is safe to say that despite the very excellent progress which has been made in the development and application of tests for oxidizable matter much still remains to be done. Some details of accepted standards still need to be modified or specified and the fields of application of the various modifications of a method of test need, as fully as possible, to be defined.

A reliable oxidation test for soluble organic matter as a measure of washing efficiency is greatly to be desired. Good progress in that direction has been made but a completely satisfactory procedure is not yet in sight.

It is important that the terms applied to chlorine, chlorine compounds, and their solution used in bleaching, purification, and grading of pulps be simplified and standardized, so as to reduce the confusion which the terms now in use cause throughout the industry.

Fifty Pounds a Month Wanted

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 12, 1942—Fifty pounds of waste paper a month from every family in America is the quota which Price Administrator Leon Henderson hopes will be collected for the needs of war, he announced today.

So many containers are needed for war shipments that an all-time record collection of 14 billion pounds of waste paper will be necessary this year in order to make boxes enough. The homes of America can salvage that much waste paper if every family saves at least fifty pounds a month.

Two newspapers a day, plus whatever magazines, wrapping paper and old boxes can be mustered, will make up a monthly bundle of fifty pounds or more, the OPA Administrator explained. Turned over to the paper board mills through local waste paper dealers or charitable organizations the monthly family accumulations could produce a total return running into several millions of dollars a month at current waste paper prices. This would be a sizeable addition to the income of America's families and an important help to the budgets of organizations which raise money in this way for their charitable work.

1st in the South-

LOBDELL ROLL GRINDERS ARE BEING INSTALLED IN PRACTICALLY ALL THE NEW SOUTHERN MILLS!

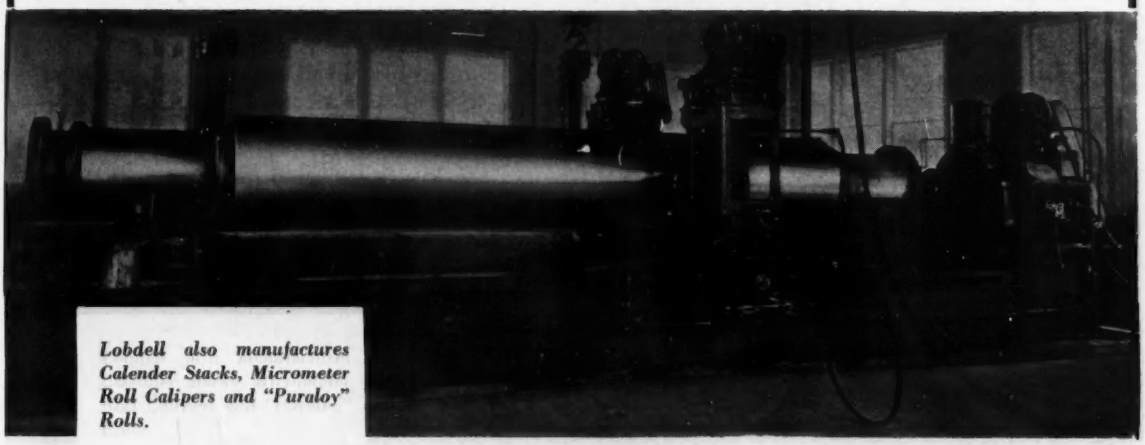
Literature on request

. . . because the Lobdell V-belt wheel drive increases power and rigidity—operates more surely and swiftly . . . because design permits rolls to be placed directly from crane or hoist without obstruction . . . because screw-well is fully enclosed . . . because bed-ways are lubricated automatically . . . because it makes easy provision for keeping the bed in alignment . . . because crown is predetermined quickly by a single micrometer adjustment . . . because the grinder has rigid support under the grinding wheels for *all* roll diameters.

Improved LOBDELL Roll Grinding Machines installed (or on order) in some Southern Mills:

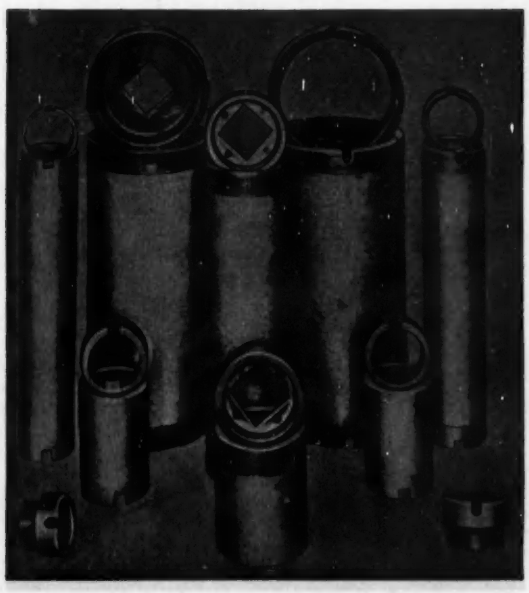
Hollingsworth & Whitney Co., Mobile—Southern Kraft Corp., Camden—Crossett Paper Mills, Crossett—Nat'l. Container Corp., Jacksonville—St. Joe Paper Co., Port St. Joe—Union Bag & Paper Co., Savannah—St. Mary's Kraft Corp., St. Marys—Southern Kraft Corp., Bastrop—Gaylord Container Corp., Bogalusa—Brown Paper Mill Co., West Monroe—Carolina Fibre Co., Hartsville—Manhattan Rubber Co., No. Charleston—Mead Corp., Kingsport—Orange Pulp & Paper Mills, Orange—Chesapeake-Camp Corp., Franklin—Hummel-Ross Fibre Corp., Hopewell.

LOBDELL CAR WHEEL COMPANY WILMINGTON, DELAWARE
107 Years in Business



Lobdell also manufactures Calender Stacks, Micrometer Roll Calipers and "Puraloy" Rolls.

LOBDELL ROLL GRINDER in the CROSSETT PAPER MILLS, Crossett, Arkansas.



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CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

CORES

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.
CORINTH, N. Y.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

Importers may have their shipments listed in these columns by submitting records of imports to this publication.

NEW YORK IMPORTS

WEEK ENDING JANUARY 10, 1942

SUMMARY

NEWSPRINT

——, ——, ——, 2163 rolls.

RAGS, BAGGINGS, ETC.

Riverside Mills, ——, ——, 71 bls. cotton picker waste, 62 bls. cotton linters
Schimmel Trading Corp., ——, ——, 143 bls. cotton waste.
——, ——, ——, 1033 bls. cotton linters.
New England Waste Co., ——, ——, 25 bls. cotton grabbots, 456 bls. cotton linters, 132 bls. cotton fly waste, 57 bls. cotton pickers waste.
Lush Cotton Products Co., ——, ——, 384 bls. cotton linters.
Castle & Overton, Inc., ——, ——, 50 bls. new cuttings, 3 bls. clips, 9 bls. wipers.
Prague Credit Bank, ——, ——, 141 bls. colored shoddy.
D. Benedetto, ——, ——, 7 bls. old hemp rags.

OLD ROPE

R. L. Pritchard, ——, ——, 675 bls. old hemp rope cuttings.
Smith & Birf, ——, ——, 250 bls. old hemp rope cuttings.

GLUESTOCK

Manufacturers Trust Co., —— ——, 51 bls. (dry).

FLESHINGS

Milligan & Higgins Corp., ——, ——, 65 bls. (dry).

CASEIN

Carr Bros., Inc., ——, ——, 40 bags (lactic), 2400 kilos.
Casein Co., of America, Inc., ——, ——, 850 bags (ground lactic), 5100 k's.
National City Bank, ——, ——, 232 bags, 15068 kilos.
Packing Products Co., ——, ——, 417 bags (ground), 25020 kilos.

WOOD PULP

——, ——, ——, 1672 bls. wood pulp.
——, ——, ——, 9771 bls. wood pulp.

F. M. Tussing to be Superintendent

EMERYVILLE, Cal., January 9, 1942—R. H. Shainwald, executive vice president of the Paraffine Companies, Inc., announced today that Ford M. Tussing will succeed the late James T. Coleman as general superintendent of the company's Emeryville Pabco plant. Mr. Tussing, who has been with the Paraffine Companies, Inc., for 15 years and who received his training under the leadership of Mr. Coleman, is an experienced, capable administrator, well acquainted with problems of plant management. Succeeding Mr. Tussing as assistant general superintendent of the Pabco plant will be Irving Hovgaard.

Philadelphia Association Meets

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., January 12, 1942—The annual election of the Paper Trade Association of Philadelphia will be held tomorrow (Tuesday) in the Down Town Club at 12:30 o'clock. The new board of governors of both fine and coarse paper divisions will be elected. The nominating committee comprising W. B. Killhour, Jr., chairman, W. Predmore and Norbert A. Considine, has submitted the following nominees for election to serve the coarse paper division: Nate Saxe, T. H. B. Smythe, W. B. Killhour, Jr., C. A. Wilder, George Goldman and George K. Hooper. For the fine paper division W. Predmore, Ralph Luff, J. P. Schmidt, Ed. Walter, R. W. Fishburn and George W. Weaver have been named. Any additional nominations may be made from the floor. Immediately following the election of the new governors, they convene and elect the president and officers to serve for 1942.

New Clark Trucktractor

Many paper, pulp and paper products plants, unable to use heavy material handling equipment due to weak floor construction, have desired a light weight, compact power truck that would lift, carry and tier loads weighing up to one ton; one that could efficiently operate in congested areas, in limited capacity elevators, in transport trucks and freight cars, and up ramps.

To meet this demand the Clark Tructractor Division of the Clark Equipment Company, Battle Creek, Mich., has developed a sturdy, low-priced, compact fork type truck that incorporates all desirable features in modern truck design. Christened the "Clipper", these trucks are offered in six models.

Assisting in the receipt of raw materials in bales, bags or rolls, performing miscellaneous handling jobs around the plant, tiering finished products in cases or bundles ceiling high in storage, later retrieving them and loading carriers; these are a few of the many ways these dwarf-size trucks cut handling costs and increase the efficiency of modern paper mills.

To Give Talk on Watermarks

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., January 12, 1942—The Philadelphia Paper and Cordage Association, Inc., has decided to have a review of the past events by one of the association's members, Thomas A. Flockhart of Holyoke Card and Paper Company. Mr. Flockhart is an authority on watermarks and will give an informative and authoritative talk on watermarks and their history at the regular monthly luncheon meeting of the association on January 16 in the Emerald Room, Hotel Adelphia.

TOUGH PAPER MILL CORES

Returnable Cores
Equipped With
BERMICO* Metal Ends

DURO is a standard core of plus-standard quality. Made from our own especially manufactured paper stock. DURO cores are made standard 3⅛″ I. D. These cores are equipped with BERMICO open or closed notch, metal ends to fit 3″ shaft. TAYLOR Ends that protect inside of core only, can also be specified.

EN-DURO a super-quality core to meet extra demands for strength and service where needed. This is our highest grade core. All cores will take either BERMICO or TAYLOR Ends which can be furnished lacquered in various colors for easy identification... Both DURO and EN-DURO cores have a thick kraft surface cover.

*(Reg. Trade Mark)

Exclusive distributors
BERMICO
(Reg. Trade Mark)
ENDS
and
BERMICO
(Reg. Trade Mark)
FIBRE CORES

Strong cellulose fibers are formed into a homogeneous tube and then especially treated to resist all weather and moisture changes. The Bermico Core is light in weight and extremely hard, strong, rugged. These particular cores have exceptionally long life in either returnable or mill roll service.

For all uses that require an extremely tough, strong, durable product, SONOCO has developed the new RHINO non-returnable paper mill core. Exhaustive tests for breaking and crushing strength and all around toughness indicate its superior qualities.

SONOCO MAKES *EVERYTHING* IN *PAPER CARRIERS*

SONOCO PRODUCTS COMPANY
BRANTFORD, ONT. HARTSVILLE, S. C. MYSTIC, CONN.
SHIPPING POINTS: LOWELL, MASS. HARTSVILLE, S. C.
DEPENDABLE SOURCE OF SUPPLY

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LOCKWOOD'S DIRECTORY
of the Paper and Allied Trades

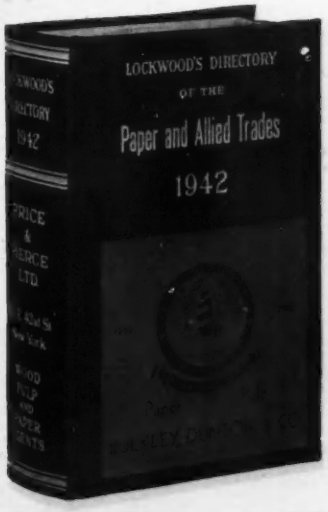
1942 Edition

67th Annual, Revised to Date

Price $7.50

or

Cash with Order* $7.00 *Delivered



LOCKWOOD TRADE JOURNAL CO., Inc.
15 West 47th Street • New York, N. Y. • U.S.A.

New York Paper and Pulp Market Review

Director of Priorities Announces Pulp Allocation Plan Effective January 9—Paper Market Active With Higher Kraft Paper Prices —Irregularity Reported In Old Waste Paper—Other Markets Firm.

Office of the PAPER TRADE JOURNAL
Wednesday, January 14, 1942.

Orders for the major lines of paper in the wholesale market continue heavy, with prices firm. Since the first of the year prices on kraft paper have been revised upward, the standard grade increased to 4.75, from 4.50 per cwt. Higher prices in other paper items are viewed in some quarters of the market as justified to meet prevailing conditions. An increase of from 5% to 8% in 1941 prices of various grades of paper in the first quarter of this year, is considered necessary in some quarters of the industry to place quotations on an equitable level.

The index of general business activity for the week ended January 3 rose to 137.3%, from 136.9% for the preceding week, compared with 121.0% for the corresponding week last year. Paper board production was 3.5% higher.

Paper production for the week ended January 3 was estimated at 102.8%, compared with 80.8% for 1941, with 82.5% for 1939, and with 70.0% for the corresponding week for 1938.

Paper board production for the week ended January 3 was 86.0%, compared with 59.0% for 1941, with 65.0% for 1940, with 45.0% for 1939, and with 45.0% for the corresponding week for 1938.

The heavy demand for paper with the possibility that unnecessarily large reserve stocks have and are being accumulated for possible, unforeseen contingencies, is the subject of a bulletin issued by the Office of Production Management. Norbert A. McKenna, Chief of the Pulp and Paper Division of the OPM, states that, "It is believed that a portion of this demand has resulted from desire to increase inventories of supplies of pulp, paper and paper products, and materials used in the manufacture, printing and publishing thereof, brought on by fear of possible curtailment in the industry or increased prices. The supply is not adequate for the establishment of unnecessarily high inventories for every consumer." Mr. McKenna explained that, "due to the unprecedented demand in 1941, the net supply of all types of paper at current levels of operation has risen to more than 21,000,000 tons."

The new mandatory restriction on inventory is as follows: "944.14 Inventory Restriction. Unless specifically authorized by the Director of Priorities, no person shall knowingly make delivery of any material whatever, and no person shall accept delivery thereof if the inventory of such material of the person accepting delivery, in the same or other forms, is, or will by virtue of such acceptance become, in excess of the practicable minimum working inventory reasonably necessary to meet deliveries of the products of the person accepting delivery, on the basis of his current method and rate of operation. Unless specifically authorized by the Director of Priorities, no person shall process, fabricate, alloy or otherwise alter the shape or form or any material if his inventory of such material in its processed, fabricated, alloyed or otherwise altered shape of form is, or will by virtue of such operation become, in excess of a practicable minimum working inventory thereof. The term 'practicable minimum working inventory' is to be strictly construed. The mere fact that the rate of turnover has increased or that materials are difficult to obtain does not justify maintaining inventories above the minimum with which operations can be continued. In the calculation of the practicable minimum working inventory of any person who imports material, either directly or through an agent, deliveries of such imported material to such person may be excluded."

Chemical Pulp

Demand continues heavy for all grades of chemical wood pulp. Prices are firm and unchanged. The Director of Priorities of the OPM has announced that sulphite pulp production will be allocated as of January 9.

Rags

No important change in prices or demand has been reported in papermaking rags this week. Mill buying of roofing rags is active. Full OPA prices are reported paid.

Old Rope and Bagging

Mill demand continues to absorb all available supplies of old Manila rope. Prices are firm and unchanged.

Trading in scrap bagging continues somewhat cautiously, with fair activity in some grades. OPA prices prevail on the roofing grades.

Old Waste Paper

Irregularity continues to be reported in the waste paper market, as a result of the failure of a comparatively few dealers and mills to adhere to the OPA maximum price schedule. The classifications, "old kraft corrugated boxes," and "old corrugated boxes," which formerly referred to jute, are said to be the chief cause of the difficulty. Opinion is expressed in some quarters of this market that the irregularity could be avoided by using only one classification, that of "old corrugated boxes," which would include both kraft and jute.

Twine

No important change in prices or demand has been reported this week in twine. Prices are firm and unchanged at prevailing, representative market quotations on all grades of hard and soft fiber twines.

Columbian Paper Co. Increases Wages

BUENA VISTA, Va., January 12, 1942—The Columbian Paper company, with plants here and at Bristol, has given its workers another wage increase, effective January 1, this being the third increase in the past six months.

West Virginia Pulp and Paper Company

230 Park Ave.
New York

35 East Wacker Drive
Chicago

Public Ledger Building
Philadelphia, Pa.

503 Market St.
San Francisco, Cal.

Manufacturers of
ENGLISH FINISH SUPERCALENDERED MACHINE FINISHED BOOK and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers

HIGH GRADE COATED BOOK

. . . .

KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

MILLS:
Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Cass, West Virginia
Charleston, South Carolina

Whenever you have

JOB LOTS—SECONDS—SIDE RUNS

for disposal

It will be to your advantage to contact us

—because we have DOMESTIC and EXPORT OUTLETS.

—because we can take any QUANTITY, however large.

—because we can pay ATTRACTIVE PRICES.

Livingston & Southard Paper Company

17 Battery Place, New York, N. Y.
Telephone, "WHitehall 4-4183"

"THERE GOES A MAN WHO HAS JUST SHOWN THIS MILL A WAY TO SAVE REAL MONEY"

● When an Orr Felt representative calls on you, ask him to explain the latest in felt manufacture. Felts **are** being improved . . . and a new Orr felt, correctly specified, may be the means of saving thousands of dollars a year.

For example, Orr pick-up felts are now finished by a special process, and mills using them are bringing their machines up to full speed within the first hour on Monday morning.

Again, makers of carbonizing and condenser papers were baffled by pin holes in the sheet. Now, Orr has solved their problem, developed a new felt to entirely overcome pin holes.

Such are the many cases of Orr advancement. So don't be surprised if an Orr representative shows you how you can make a profitable change in felts. You, too, may someday say, "There goes a man who has just shown this mill a way to save **real** money".

ORR FELTS

THE ORR FELT and BLANKET CO.
PIQUA, OHIO

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL
Wednesday, January 14, 1942.

BLANC FIXE—Prices on blanc fixe are firm and unchanged and conform to prevailing market levels. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton, f.o.b. works. Demand reported good for the week.

BLEACHING POWDER—Quotations on bleaching powder are firm. Demand reported active for the week. Bleaching powder is currently quoted at $2.25 per 100 pounds, in drums, at works.

CASEIN—Prices on casein are firm, under a good demand for the current week. Standard domestic casein, 30-30 mesh, is currently quoted at 31 cents per pound; 80-100 mesh, at 31½ cents per pound. All prices in bags, car lots. Argentina casein, 20-30 mesh, is currently offered at 27 cents per pound. No quotations in French casein.

CAUSTIC SODA—Quotations on caustic soda are firm and continue unchanged at prevailing market prices. Demand reported heavy. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, car lots, at works.

CHINA CLAY—Prices on china clay are firm and conform to prevailing market levels. Demand reported moderate at this date. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is currently offered at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine are firm and unchanged. Demand exceeds production. Market under mandatory priority ruling. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported firm for the week with prices higher on some grades. "G" gum rosin is currently quoted at $3.08 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $3.10 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $3.40 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand active for the current week. Domestic salt cake is currently quoted at $15 per ton, in bulk; chrome cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16 per ton imported salt cake is nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market levels. Demand reported heavy for the week. Prices on soda ash in car lots, per 100 pounds, are as follows; in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and are reported unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds. All prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported good for the current week. The commercial grades are currently quoted at $1.15; iron free at $1.75 to $1.85 per 100 pounds. All prices in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and conform to prevailing market levels. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mines. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$6.00	@	$7.00
Superstandard	5.25	"	6.25
Northern Standard Wrapping	4.75	"	5.25
Standard Wrapping	4.75	"	—
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.05	"	—
White No. 1½	1.00	"	—
White No. 2	1.00	"	—
Anti-Tarnish M. G.	.95	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.35	"	—
Bleached, Jr.	2.65	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.75	@	10.75
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	*45.00	@	—
Chip	*45.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*60.00	"	—
Binders Boards	*80.00	"	—

* OPA Maximum Prices.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$40.25@$47.25	$41.40@$48.50
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	32.20 " 37.75
75% Rag	24.75 " 29.00	25.90 " 30.50
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—
White, Assorted Items.
Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—
White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$13.65@$15.50
No. 2 Glossy Coated	12.40 " 14.00
No. 3 Glossy Coated	11.60 " 13.25
No. 4 Glossy Coated	11.15 " 12.75
No. 1 Antique (watermarked)	10.25 " 11.75
No. 2 Offset	9.60 " 11.00
A Grade E. F.	9.35 " 10.75
A Grade S. & S. C.	9.60 " 11.00
B Grade E. F.	8.85 " 10.25
B Grade S. & S. C.	9.10 " 10.50
C Grade E. F.	8.55 " 9.75
C Grade S. & S. C.	8.80 " 10.00
D Grade E. F.	8.25 " 9.50
D Grade S. & S. C.	8.50 " 9.75

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	No prices		
Dry	No prices		
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	45.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.62½	@	4.75
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	4.25
Strong Unbleached Sulphite	3.17½	"	4.25
News Grade, delivered			
Unbleached Sulphite	63.75	"	67.75
(On Dock, Atlantic Ports)			
Kraft Bleached	4.12½	"	—
Kraft Light & Strong	No price		
Kraft No. 1	No prices		
(Delivered)			
Kraft Domestic and Canadian	3.00	"	4.00
(Delivered)			
Soda Bleached	3.30	"	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Skirt Cuttings—			
New White, No. 1	8.00	@	8.25
Silesias No. 1	4.50	"	4.75
New Unbleached	8.00	"	8.25
Blue Overall	5.75	"	6.00
Fancy	3.00	"	3.25
Washables	2.50	"	2.75
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cutings	3.00	"	3.15

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.90	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.50	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—

*OPA Maximum Prices.

Foreign Rags

All prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

J. Andersen & Co.

Selling Agents

21 East 40th Street

New York

CHEMICAL & MECHANICAL PULP

Kraft Pulp

BERGVIK OCH ALA NYA AKTIEBOLAG
Söderhamn, Sweden
KALIX TRÄINDUSTRI AKTIEBOLAG
Vanaftärden, Sweden
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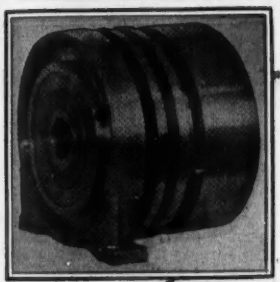

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No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.06	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging
(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.00	@	4.25
Wool Tares, light....	4.25	"	4.50
Wool Tares heavy..	4.50	"	4.75
Bright Bagging.....	3.50	"	3.75
Manila Rope			
Foreign	6.50	"	6.75
Domestic	6.50	"	6.75
Jute Threads.....	4.00	"	4.25
Sisal Strings.....	2.75	"	3.00
Mixed Strings.....	1.10	"	1.20

Old Waste Papers
(F. o. b. New York)
OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts....	3.12½	"	—
No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Hard White Shavings, ruled...	2.50	"	—
Soft White Shavings, one cut.....	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings..	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
Mixed Books.....	1.07½	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut..	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas.....	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft.	2.50	"	—
New 100% Kraft Corrugated Cuttings..	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Old Kraft Corrugated Containers	1.35	"	—
Jute Corrugated Cuttings	.90	"	—
Old Corrugated Containers	.82½	"	—
Box Board Cuttings.	.72½	"	—
White Blank News.	1.65	"	—
Overissue News.....	.85	"	—
No. 1 Baled News..	.75	"	—
No. 1 Mixed Paper.	.70	"	—

Twines
(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp.....	.21	"	—
Fine Polished—			
Fine India.....	.26	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers.....	.17	"	—
Tube Rope.....	.19	"	—
Wall Paper.....	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope...	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java.....	.18	"	—
Mex. Sisal.....	.16	"	—
Manila	.26	"	—

PHILADELPHIA

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1.	.07¼	@	.07½
New White No. 2.	.04½	"	.05
Light Silesias.....	.04½	"	.04¾
Silesias, No. 1....	.04	"	.04¼
Black Silesias, soft	.03¾	"	.04
New Unbleached..	.07¼	"	.07½
Washable Prints...	.03¾	"	.03½
Washable No. 1..	.02	"	.02¼
Blue Overall.....	.04½	"	.05½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales....	.03¼	"	.03½
New Black Soft...	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.....	.03	"	.03¼
No. 2 Mixed.....	.02¼	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas.....	.04¾	"	.05¼
New Black Mixed.	—	"	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
White No. 2—Repacked	2.90	"	—
Miscellaneous No. 1.	3.20	"	—
Miscellaneous No. 2.	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1.....	Nominal		
Domestic No. 1...	1.55	"	—
Domestic No. 2...	1.45	"	—
Roofing Bagging..	1.35	"	—

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Manila Rope.....	5.00	"	5.50
Sisal Rope.....	3.75	"	—
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	3.25	"	3.50
No. 2.....	1.75	"	1.80
Wool Tares, heavy...	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers
(F. o. b. Phila.)
OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled.	2.87½	"	—
Soft White Shavings, one cut.....	2.87½	"	—
White Blank News..	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger.	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper.	.70	"	—
Box Board Cuttings.	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News.....	.85	"	—
No. 1 Baled News...	.75	"	—

BOSTON

Old Papers
(F. o. b. Boston)
OPA Maximum Prices

No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Hard White Shavings, ruled...	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut.....	2.87½	"	—
Hard White Envelope Cuts, one cut.....	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft.	2.50	"	—
Mixed Kraft Env. & Bag Cuttings.....	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
New Manila Envelope Cuts, one cut.....	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News..	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper.	.70	"	—
Overissue News.....	.85	"	—
Box Board Cuttings.	.72½	"	—
Old Kraft Corrugated Containers	1.35	"	—
Old Corrugated Containers	.82½	"	—
Jute Corrugated Cuttings	.90	"	—

Bagging
(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.00	@	4.25
Sisal Rope.....	4.00	"	4.25
Mixed Rope.....	1.00	"	1.25
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.25
Soft Jute Rope.....	5.25	"	5.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.75	"	7.00
Jute Carpet Threads.	3.25	"	3.50
Bleachery Burlap....	7.00	"	7.75
Scrap Burlap—			
Foreign	(nominal)		
Domestic	4.00	"	4.25
Scrap Sisal.....	3.25	"	3.75
Scrap Sisal for Shredding	4.00	"	4.25
Wool Tares—			
Foreign	(nominal)		
Domestic	4.00	"	4.25
Aust. Wool Pouches.	5.25	"	5.50
New Burlap Cuttings	4.00	"	4.50
Heavy Baling Bagging	4.75	"	5.25
Paper Mill Bagging..	2.75	"	3.00
No. 2 Bagging.....	1.35	"	—

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	.04½	@	.04¾
Fancy Percales....	.04¼	"	.05
New White No. 1.	.07¾	"	.08
New Light Flannelettes	.06	"	.06¼
Canton Flannel, Bleached	.08	"	.08¼
Underwear Cutters, Bleached	.08	"	.08¼
Silesias No. 1.....	.04½	"	.05
New Black Silesias..	.03½	"	.03¾
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached....	.08¼	"	.08½
Blue Cheviots....	.04¾	"	.05
Fancy	.02¾	"	—
Washable	.01¾	"	—
Cottons—According to Grades—			
Blue Overalls.....	—	"	.05½
New Black, Soft..	.03¾	"	.04
Khaki Cuttings.....	.02¼	"	.02¾
O. D. Khaki.....	.02½	"	.03¼
Corduroy	.02	"	.02½
New Canvas.....	.06	"	.06½
B. V. D. Cuttings...	.07¾	"	.08

Domestic Rags (Old)
(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—*
Miscellaneous	3.20	"	—*
White No. 2—			
Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls...	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.55	"	—*
No. 2.....	1.45	"	—*
No. 3.....	1.35	"	—*
No. 4.....	1.35	"	—*
No. 5, Quality A..	1.35	"	—*
Quality B..	1.20	"	—*
Quality C..	.95	"	—*

* OPA Maximum Prices.

Foreign Rags
(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons.....	(nominal)
Dutch Blues.....	(nominal)
New Checks and Blues	(nominal)
Old Fustians.....	(nominal)
Old Linsey Garments.	(nominal)
New Silesias.....	(nominal)

CHICAGO

Waste Paper
(F. o. b. Chicago)
OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
White Blank News..	1.65	"	—
Mixed Kraft Env. & Bag Cuttings..	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News.....	.85	"	—
No. 1 Baled News..	.75	"	—
No. 1 Mixed Paper..	.70	"	—
No. 1 Roofing Rags..	1.50	"	—
No. 2 Roofing Rags..	1.45	"	—

Canadian Association Meets This Month

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 12, 1942—The annual convention of the Canadian Pulp and Paper Association will be held on January 28th, 29th and 30th. There will be the usual 3-day sessions of the Woodlands and Technical Sections, with papers and discussions on practical problems, and the annual meeting of the Association will be on the last day, when apart from the business to be transacted the only function will be a luncheon. A. E. Cadman, general manager of the Association is now busy with the arrangements. The proceedings throughout will be of a strictly business character, in view of the war, with an absence of special features such as characterized the convention in some former years.